WCH-201
Rev. 0

River Corridor
Closure Contract

Columbia River Component Data Gap Analysis

October 2007

Washington Closure Hanford

Prepared for the U.S. Department of Energy, Richland Operations Office
Office of Assistant Manager for River Corridor

STANDARD APPROVAL PAGE

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10-22-07
Date

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EXECUTIVE SUMMARY

INTRODUCTION

This Data Gap Analysis report documents the results of a study conducted by Washington Closure Hanford (WCH) to compile and review the currently available surface water and sediment data for the Columbia River near and downstream of the Hanford Site. The U.S. Department of Energy (DOE), which retains responsibility for the Hanford Site, is currently in the process of conducting remedial investigations and activities. This Data Gap Analysis study was conducted to review the adequacy of the existing surface water and sediment data set from the Columbia River, with specific reference to the use of the data in future site characterization and screening level risk assessments. The goal is to determine if there are sufficient data to characterize the current effects of Hanford Site operations on the Columbia River. The specific technical objective of this effort was the identification of spatial, temporal, or analytical data gaps.

Remedial activities at the Hanford Site are being conducted within the regulatory framework of the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA, or Superfund*)* and to date have consisted of extensive studies and remedial actions in areas in the upland and riparian areas of the Hanford Site and the near-shore areas of the Columbia River. The Columbia River itself, which contains residuals from historical practices at the Hanford Site as well as from current upstream non-Hanford Site sources, is not formally part of the Hanford Site; however, it is being investigated under the same Superfund process.

This study exists as part of a larger effort by the DOE to conduct a comprehensive evaluation of the Columbia River Corridor. Upland, riparian, and near-shore areas are currently being evaluated by a separate risk assessment of the 100 and 300 Areas (DOE/RL-2007-21, *Risk Assessment Report for the 100/300 Area Component of the River Corridor Baseline Risk Assessment*), subsequently referred to as the 100/300 Area RCBRA, and the approach, methodology, and criteria used in that effort are closely followed in this Data Gap Analysis. As described in more detail in Section 6.0, this data gap report will be followed by a remedial investigation work plan, which will include a data quality objective (DQO) process and a sampling and analysis plan to support the screening-level risk assessment, both of which will

contain additional detail to support and implement the general recommendations in this report, and which will provide additional opportunity for public input.

This report reflects the outcome of a meeting with DOE, the U.S. Environmental Protection Agency (EPA), Washington State Department of Ecology (Ecology), and members of the Natural Resource Trustee Council, held at the Ecology offices in Richland, Washington, on June 5 and 6, 2007. During that meeting, the goals, methodology, and preliminary findings of the Data Gap study were presented for review and comment. Comments received during that presentation, or submitted in writing afterwards, were considered and incorporated into this report as appropriate.

PURPOSE AND METHODOLOGY

The purpose of this Data Gap Analysis is to identify potential data gaps in the spatial, temporal, and chemical composition of the existing data set and to determine if there are sufficient data to characterize the effects of Hanford Site operations on the Columbia River. Achieving this goal required the completion of two significant supporting tasks: (1) compiling existing and relevant river data into a single database and (2) identifying the specific portion of the river for which data gaps would be evaluated. Both of these tasks are included as part of this report. The initial Study Area for this Data Gap Analysis was the Columbia River from Grand Coulee Dam to the Pacific Ocean.

The Data Gap Analysis itself followed a logical sequence of steps designed to systematically evaluate the data for contiguous sections of the river. Data were reviewed to assess the adequacy of both the number and location of samples and the number and type of analytes. The following steps were conducted for this evaluation:

Step 1 Compile existing relevant data into one comprehensive database.

Step 2 Update existing conceptual site model: How do contaminants originate and move in the river?

Step 3 Evaluate spatial and temporal distribution of the existing data to determine adequacy of coverage: Are there enough samples in the right places?

Step 4 Define the Primary Study Area for the Data Gap Analysis, based on historical Hanford Site operations and river data.

Step 5 Identify Site Analytes for detailed mapping and review.

Step 6 Identify preliminary data gaps for Site Analytes.

The results of the study are summarized below.

RESULTS

Data Compilation: The combined database created for this Data Gap Analysis consists of data from the following sources:

- The original Columbia River Component (CRC) database
- U.S. Army Corps of Engineers
- Inter-Area assessment sample location data
- Data used in the 100/300 Area RCBRA
- Mid-Columbia River sediment data provided by EPA Region 10, Watershed Restoration Unit, on June 8, 2007
- 2004 and 2005 data from the Pacific Northwest National Laboratory.

The starting point for this combined database was the CRC database from *Existing Source Information Summary Report Compilation/Evaluation Effort: December 2004 to September 2005, Columbia River Component of the River Corridor Baseline Risk Assessment* (WCH-64), and *Columbia River Component Data Evaluation Summary Report* (WCH-91). This original database was created in Microsoft® Access™ and was used as a framework for the

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development of the combined database. As part of this Data Gap Analysis, additional fields and/or tables were added to the original database to incorporate information from the other data sources that did not have a place in the original CRC database structure and to incorporate other data-specific information, such as ecological and human health benchmarks.

Analytical data from the Inter-Area investigation were imported but not used in the analysis because they had not been validated at the time this report was written. However, sample location coordinates were imported and are shown on the maps in this report.

Conceptual Site Model: The conceptual site model for Hanford Site contaminant transport in the Columbia River is primarily a function of the hydrogeological characteristics of the river. The river is characterized by a swift current and a generally gravel-and-cobble bottom typical of fast-water environments. In addition, the periodic episodes of high flow that result from large releases at the upriver Priest Rapids Dam serve to prevent the development of permanent deposits in the main channel of the Hanford Reach. Depositional areas for fine-grained sediment exist primarily in the sloughs and backwaters that exist in some areas on the shores of the river. Large sloughs are present downriver of the 100-F Area and the Hanford Townsite, but smaller sloughs exist at various locations along both river shorelines. In addition, areas around and downstream of islands, some of which are regularly inundated, also offer protected areas where fine-grained material may deposit. Sediment-bound contaminants are thus not present in the main channel of the river or to be distributed over large areas of the river, because the river current prevents the deposition of sediment in the bulk of the river corridor. Rather, contaminants would be present in the sloughs, depositional beaches, and side areas along the river channel where water velocity decreases and fine-grained material accumulates. Compounds dissolved in the water column are quickly diluted and transported off site by the large volume of fast-flowing water, and this phenomenon is reflected by the generally very low concentrations of constituents currently detected in surface water. Much of the historical contaminant load in surface water was likely transported downriver.

Now that nuclear and industrial activity has been discontinued at the Hanford Site, direct discharge to the Columbia River has also been discontinued. Currently, contaminated groundwater influx is the most significant source of Hanford Site-related contaminants to the

river. Contaminated groundwater enters the river along the right[1] bank as both subaerial and subaqueous seeps and springs. These discharges represent the most significant source of organic compound, metal, and radionuclide contamination. Numerous studies, specifically *Hanford Riverbank Springs Characterization Report* (PNNL-7500), *Hanford Site Environmental Report for Calendar Year 1997* (PNNL-11795), *Hanford Site Environmental Report for Calendar Year 2004* (PNNL-15222), *Hanford Site Environmental Report for Calendar Year 2005* (PNNL-15892), 100/300 Area RCBRA, and the ongoing Inter-Area studies, all demonstrate that contamination is coming from the seeps and springs along the right bank of the Hanford Reach. Sediment and surface water directly adjacent to the discharges have the greatest relative concentrations of Hanford Site-related contaminants. Because of mixing within the river channel, concentrations of contaminants decrease with distance from these continuing sources.

Spatial and Temporal Distribution: To evaluate the spatial and temporal distribution of the existing data set, figures and tables were developed presenting the entire data set for the Data Gap Analysis Study Area, which is the Columbia River from Grand Coulee Dam to the Pacific Ocean. The database includes more than 2,000 sediment and 5,550 surface water samples.

Based on the Hanford Site operational history, dam locations, and data density, the Study Area was divided into the following three sections to facilitate assessment, presentation, and discussion:

- River Section I – This section of the Columbia River is upriver from the Hanford Site and extends from the Vernita Bridge (River Mile [RM] 388, considered the upstream boundary of the Hanford Site) to Grand Coulee Dam.

- River Section II – This section of the Columbia River extends from the Vernita Bridge (RM 388) downriver to McNary Dam (RM 292). This 154 km (96-mi) section includes the 82 km (51-mi) stretch referred to as the Hanford Reach.

- River Section III – This section of the Columbia River extends from below McNary Dam to the outlet of the Columbia River at the Pacific Ocean.

[1] For ease of reference within this report, the terms ”left” and “right” are used when referring to the river banks. These terms reflect the view when facing downriver, which is in general north to south.

To determine the spatial distribution of surface water and sediment samples, locations were georeferenced and plotted on the maps. To assess the temporal distribution of the sampling events, bar charts and tables showing the number and types of analyses completed each year were generated. The conclusions of the spatial and temporal evaluation were as follows.

River Section I - Based on the analysis of the spatial and temporal distribution of sediment and surface water sample locations and analytes, there do not appear to be significant data gaps associated with this section of the river. In addition, data from the Priest Rapids pool and the Vernita Bridge area are sufficient in number and analytes to calculate upriver background concentrations, as described in Section 2.0.

River Section II - Based on the analysis of the spatial and temporal distribution of sediment and surface water sample locations and analytes within River Section II (Vernita Bridge to McNary Dam), no temporal data gaps were identified. However, three potential data gaps appear based on limited spatial distribution:

1. Sloughs on the left shore of the river (sediments and surface water)
2. Islands directly downstream of known source areas (sediments only)
3. Depositional areas at the upstream end of Lake Wallula, which is the southern boundary of the 300 Area (sediments and surface water), and sediments near McNary Dam.

River Section III – At this time, it is not anticipated that additional sampling in River Section III is required. This CRC Data Gap Analysis assumes that near-source areas will pose the highest relative concentration of Hanford Site-related contaminants and therefore represent the greatest potential risks. The purpose of this Data Gap Analysis is to determine if there are sufficient data to characterize the effects of Hanford Site operations on the Columbia River. Therefore, it is focused on those areas that contain the highest concentration of Hanford Site-related material (i.e., River Section II).

Primary Study Area: The Primary Study Area for this Data Gap Analysis was determined by reviewing the existing data set, comparing the dam construction timeline to the documented discharge of Hanford Site-related contaminants to the Columbia River, and evaluating sediment both in the Hanford Reach and behind upstream and downstream dams. The Study Area for this evaluation consisted of the river from Grand Coulee Dam to the Pacific Ocean. A more

focused area of study (i.e., the Primary Study Area) was determined by using the following phased approach:

- Phase I – Compare dam construction, radionuclide release timeline, and sedimentation.
- Phase II – Review conclusions from previous studies.
- Phase III – Normalize historical radionuclide sediment data to 2007 concentrations.
- Phase IV – Compare relative inventories behind each dam.
- Phase V – Compare normalized inventories to risk screening levels.
- Phase VI – Identify Primary Study Area.

Based on this review process, the Primary Study Area was identified as the Columbia River between the Vernita Bridge and McNary Dam (i.e., River Section II). McNary Dam was chosen as the lower boundary of the study area because numerous studies have demonstrated that the highest Hanford Site-related inventory (radionuclides) is present behind this dam, which is the first dam downstream of the Hanford Site. Construction of this dam began in 1947, three years after production began at the Hanford Site. Discharge of contaminated reactor cooling water began in September 1944 when the 105- B Reactor came on line and ended in January 1971 when the 105-KE Reactor, the last of the single-pass cooling water reactors, was shut down. Construction of McNary Dam created an impoundment on the river that is nearly 64 km (40 mi) long (Lake Wallula). The impoundment not only stores water for electric production, but also creates a settling basin for suspended sediments. As a result of subsequent sediment deposition, the contaminant-containing sediments are now buried beneath several feet of relatively ”clean” sediments.

Within the river, the lateral boundaries of this Data Gap Analysis were set to complement the study boundaries of the 100/300 Area RCBRA and the subsequent Inter-Area study. These studies evaluated the near-shore portion of the river to a water depth of approximately 1.8 m (6 ft) from the low-water mark (“Green Line”) on the right shore (facing downriver). This Data Gap Analysis study focused on the remainder of the river, i.e., the portion to the left of the Green Line. However, the planned screening-level risk assessment will evaluate aquatic receptors that move freely throughout the river, regardless of study boundaries.

The way this Data Gap Analysis was conducted to coordinate with the 100/300 Area RCBRA is as follows:

- For the purposes of determining whether the composition of the data set (e.g., number of analyses per compound) is adequate for risk assessment, the entire data set was used. This includes data from all parts of the river, both left and right of the Green Line, collected for the 100/300 Area RCBRA and other studies.

- For the purposes of determining where additional sample locations may be required, only the data from left of the Green Line are considered. This area includes the islands as well as the shore on the left side of the river. This is because the sampling program in the area to the right of the Green Line was the focus of extensive effort and review in the 100/300 Area RCBRA and the Inter-Area study, and is thus considered adequate for the number and location of samples in that area. The number and location of samples left of the Green Line was not evaluated by those studies, however, so this was the explicit focus of the locational part of the Data Gap Analysis.

- From the southern property boundary of the Hanford Site to McNary Dam, the lateral area of study extends from the left to right shore of the river, including sloughs, for both purposes.

Site Analytes: The initial list of compounds consisted of all detected compounds in samples from the Primary Study Area. Because the Primary Study Area consists of the reach between the Vernita Bridge and McNary Dam (River Section II), this "Hits Only" list of detected compounds was then compared to the 100/300 Area contaminants of potential concern (COPCs) identified for surface water and sediment as part of the 100/300 Area RCBRA. The focused COPC list from the 100/300 Area RCBRA was developed during several rounds of submittals, reviews, and comments from EPA, Ecology, and the Trustees that occurred during the preparation of the 100/300 Area RCBRA and supporting documents. Accordingly, the focused COPC list from the 100/300 Area RCBRA is considered relevant for this data gap evaluation. The 100/300 Area RCBRA COPCs are included in the list of detected compounds. This list was then evaluated as part of a five-step process, which served to focus analysis efforts on those compounds most likely to be of concern in subsequent risk assessment or characterization efforts, referred to as Site Analytes. The process of narrowing this list to the final list of Site Analytes was composed of a sequential series of data reviews, as follows:

Starting List: Detected compounds from the Primary Study Area, including 100/300 Area RCBRA focused COPCs

Data Filters:

1. Compare maximum detected concentration to lowest of either the human health or ecological risk-based values

2. Compare to site-specific upriver background concentrations

3. Remove known laboratory contaminants

4. Evaluate low frequency of exceedance

5. Revise according to additional considerations: groundwater and biota data, site use, 100/300 Area RCBRA findings, etc.

Based on this evaluation, the following were identified as Site Analytes for detailed evaluation:

Surface Water Site Analytes		**Sediment Site Analytes**	
Metals	**Radionuclides**	**Metals**	**Radionuclides**
Aluminum	Strontium-90	Arsenic	Cesium-137
Arsenic	Tritium	Antimony	Cobalt-60
Barium	Uranium-234	Barium	Uranium-234
Boron	Uranium-238	Chromium	Uranium-238
Chromium		Selenium	
Chromium – hexavalent	**Organics**	Vanadium	
Iron	1,1,2-trichlorethane (TCA)	**Organics**	
Manganese	1,2-dichlorethane (DCA)	Polychlorinated biphenyl (PCB) congener	
Uranium	Chloroform		
	Trichlorethene (TCE)		

Because of ongoing sampling, PCB congeners were identified as a Site Analyte but will be evaluated for data gaps during the DQO process rather than in this report.

Preliminary Data Gap Analysis: In this step, the Site Analytes were subject to detailed evaluation to determine whether data gaps exist. This step includes the following types of evaluation:

- Detailed mapping of the location of criteria exceedances of each of the Site Analytes in large-scale maps
- Tabulation and review of the number of exceedances versus the number of detections and the number of samples analyzed
- Review of sample exceedance locations relative to the location of source areas, sloughs, islands, and known depositional areas for fine-grained sediment
- Review of sample locations and types relative to the general conclusions about spatial distribution of data
- Professional judgment about the adequacy of sample location and density.

The conclusions from this Data Gap Analysis are as follows:

1. A very large volume of data exists for the Columbia River surface water and sediment within the Hanford Reach.
2. In general, the data set is large enough to represent spatial and temporal trends in the data.
3. Preliminary data gaps are summarized as follows:
    - Sloughs and backwaters on the left side (facing downriver) of the river. Although both surface water and sediment sampling transects have been completed, most samples were collected on the right side of the river, which forms the site boundary. Fewer data exist on the left side.

- Islands immediately downstream of source areas. As shown by the close-area maps in Appendix C, depositional areas exist around islands downstream of source areas. Some of these island depositional areas have not been fully characterized.

- Locations on the left shore downriver of source areas. River transport mechanisms can disperse sediment throughout the river, and left shore sediment samples are lacking downriver of some reactors and the White Bluffs Townsite and the Hanford Townsite.

- Several irrigation returns throughout the reach, particularly the Saddle Mountain Wasteway.

- Near-shore areas in the Richland area, including surface water in the area of the Richland pump house.

- Downriver in Lake Wallula. Several sampling and coring activities have focused on sediment behind McNary Dam, but fewer sediment samples exist near the headwaters of the lake or along the shorelines or channel in the middle reach of the lake.

- Sediment behind McNary Dam. Additional sediment cores may be needed behind McNary Dam.

4. Nearly all surface water and sediment samples from the Hanford Site have reported nondetect results for PCBs by Method 8082, but PCBs have been detected in fish tissue from within the Hanford Reach. However, the source of PCBs is unclear. PCB contamination exists throughout the entire Columbia River Basin. There are numerous known sources of PCBs both upriver and downriver of the Hanford Site. Additional sampling of surface water and sediments by PCB congener analysis is being conducted as part of the next phase of the 100/300 Area RCBRA. These data will help to obtain a resolution regarding the source of PCBs. Congener analysis should also provide sufficiently low detection limits necessary to confirm or deny the presence and concentration of PCBs within the Hanford Reach. The results of the additional PCB analyses conducted as part of the 100/300 Area RCBRA will be available and reviewed during the DQO process.

FUTURE ACTIVITIES

This document is an initial step in a series of steps associated with a final evaluation of potential Hanford Site effects on the Columbia River. Because a limited amount of additional samples may be needed, supporting documents will be produced to fully describe the details and intent of additional data collection events.

The next phase in the process is the DQO process, which is required by the DOE in planning and coordinating data acquisition for environmental decision making. DQOs are qualitative and quantitative statements that clarify environmental investigation goals, define data needs, specify decision rule criteria and tolerable decision errors, and establish sampling approaches that support the decision-making process. The DQO process emphasizes the use of existing Hanford Site analytical and historical information to reduce costly data gathering activities.

Following the DQO process, the following near-term steps are anticipated:

Work Plan: Following the DQO development, a remedial investigation work plan, including sampling and analysis plan, will be prepared to provide the details of sample collection and analysis.

Site Sampling: Site sampling, the actual collection of surface water and sediment samples as needed, will be conducted after the previous two documents have been approved.

Screening-Level Risk Assessment: After the sampling data have been obtained and validated, the screening-level human health and ecological risk assessments will be completed.

Depending on the results of the screening-level risk assessments, a baseline risk assessment, preceded by a work plan, may be completed. Additional studies and plans will follow as appropriate.

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REVISION HISTORY

Revision	Date	Reason for revision	Revision initiator
0	10/2007	Initial issuance	NA

ACRONYMS

CAS	Chemical Abstracts Service
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
CLARC	Cleanup Levels and Risk Calculation
COPC	contaminant of potential concern
CRC	Columbia River Component
CSM	conceptual site model
DCA	dichlorethane
DOE	U.S. Department of Energy
DQO	data quality objective
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
FS	feasibility study
GiSdT	Guided Interactive Statistics Decision Tools
MCL	maximum contaminant level
NPDES	National Pollutant Discharge Elimination System
NRWQC	National Recommended Water Quality Criteria
OU	operable unit
PAH	polyaromatic hydrocarbon
PCB	polychlorinated biphenyl
PCE	tetrachlorethene
PNNL	Pacific Northwest National Laboratory
PQL	practical quantitation limit
PRG	preliminary remediation goal
QA	quality assurance
QC	quality control
RCBRA	River Corridor Baseline Risk Assessment
RI	remedial investigation
RM	River Mile
SESP	Surface Environmental Surveillance Project
SVOC	semivolatile organic compound
TCA	trichlorethane
TCE	trichlorethene
Tri-Party Agreement	*Hanford Federal Facility Agreement and Consent Order*
VOC	volatile organic compound
WCH	Washington Closure Hanford

METRIC CONVERSION CHART

Into Metric Units			Out of Metric Units		
If You Know	*Multiply By*	*To Get*	*If You Know*	*Multiply By*	*To Get*
Length			**Length**		
inches	25.4	millimeters	millimeters	0.039	inches
inches	2.54	centimeters	centimeters	0.394	inches
feet	0.305	meters	meters	3.281	feet
yards	0.914	meters	meters	1.094	yards
miles	1.609	kilometers	kilometers	0.621	miles
Area			**Area**		
sq. inches	6.452	sq. centimeters	sq. centimeters	0.155	sq. inches
sq. feet	0.093	sq. meters	sq. meters	10.76	sq. feet
sq. yards	0.836	sq. meters	sq. meters	1.196	sq. yards
sq. miles	2.6	sq. kilometers	sq. kilometers	0.4	sq. miles
acres	0.405	hectares	hectares	2.47	acres
Mass (weight)			**Mass (weight)**		
ounces	28.35	grams	grams	0.035	ounces
pounds	0.454	kilograms	kilograms	2.205	pounds
ton	0.907	metric ton	metric ton	1.102	ton
Volume			**Volume**		
teaspoons	5	milliliters	milliliters	0.033	fluid ounces
tablespoons	15	milliliters	liters	2.1	pints
fluid ounces	30	milliliters	liters	1.057	quarts
cups	0.24	liters	liters	0.264	gallons
pints	0.47	liters	cubic meters	35.315	cubic feet
quarts	0.95	liters	cubic meters	1.308	cubic yards
gallons	3.8	liters			
cubic feet	0.028	cubic meters			
cubic yards	0.765	cubic meters			
Temperature			**Temperature**		
Fahrenheit	subtract 32, then multiply by 5/9	Celsius	Celsius	multiply by 9/5, then add 32	Fahrenheit
Radioactivity			**Radioactivity**		
picocuries	37	millibecquerel	millibecquerels	0.027	picocuries

1.0 INTRODUCTION

This Data Gap Analysis report documents the results of a study conducted by Washington Closure Hanford (WCH) to compile and review the currently available surface water and sediment data for the Columbia River near and downstream of the Hanford Site. The U.S. Department of Energy (DOE), which retains responsibility for the Hanford Site, is currently in the process of conducting remedial investigations (RIs) and activities in and near the former operating portions of the facility. This Data Gap Analysis study was conducted to review the adequacy of the existing surface water and sediment data from the Columbia River, with specific reference to the use of the data in future site characterization and screening level risk assessments.

Remedial activities at the Hanford Site are being conducted within the regulatory framework of the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA, or Superfund*)* and to date have consisted of extensive studies and remedial actions in the upland areas, and limited remedial actions in riparian areas of the Hanford Site. The Columbia River itself, which contains residuals from historical practices at the Hanford Site as well as from current non-Hanford Site upstream sources, is not formally part of the Hanford Site; however, it is being evaluated under the same Superfund process. This Data Gap Analysis was undertaken as a more comprehensive evaluation, with the specific goal of evaluating the adequacy of the existing surface water and sediment data set for use in future site characterization and completing future screening-level risk assessments. The specific technical objective of this effort was the identification of spatial, temporal, or analytical data gaps.

This study exists as part of a larger effort by the DOE to conduct a comprehensive evaluation of the Columbia River Corridor. Upland, riparian, and near-shore areas are currently being evaluated by a separate risk assessment of the 100 and 300 Areas (DOE/RL-2007-21, *Risk Assessment Report for the 100 Area and 300 Area Component of the River Corridor Baseline Risk Assessment*), subsequently referred to as the 100/300 Area RCBRA, and the approach, methodology, and criteria used in that effort are closely followed in this Data Gap Analysis. As described in more detail in Section 6.0, this data gap report will be followed by a RI work plan, which will include a data quality objective (DQO) process and a sampling and analysis plan to support the screening-level risk assessment, both of which will contain additional detail to support and implement the general recommendations in this report, and which will provide additional opportunity for public input.

This report reflects the outcome of a meeting with DOE, the U.S. Environmental Protection Agency (EPA), the Washington State Department of Ecology (Ecology), and members of the Natural Resource Trustee Council, held at the Ecology offices in Richland, Washington, on June 5 and 6, 2007. During that meeting, the goals, methodology, and preliminary findings of the study were presented for review and comment by the regulators and Trustees, which include the DOE, U.S. Department of the Interior, Nez Perce Tribe, State of Oregon, Confederated Tribes of the Umatilla Indian Reservation, State of Washington (including Ecology and the Washington Department of Fish and Wildlife), and the Confederated Tribes and Bands of the Yakama Indian Nation. Comments received from the these parties during that presentation, or submitted in writing afterwards, were considered and incorporated into this report, as appropriate.

1.1 PURPOSE AND SCOPE

The purpose of this Data Gap Analysis is to identify potential data gaps in the spatial, temporal, and chemical composition of the existing data set. Achieving this goal required the completion of two significant supporting tasks: (1) the compilation of all existing and relevant river data into a single database and (2) identifying the specific portion of the river for which data gaps would be evaluated. Both tasks are included as part of this report.

This report complements key previous and ongoing work at the Hanford Site that specifically relates to the Columbia River. These include the 100/300 Area RCBRA and *Columbia River Component Data Evaluation Summary Report* (WCH-91), which is reflected in the present report. Also considered in this document are the sampling locations used in the inter-areas riparian and near-shore assessment sampling effort (DOE/RL-2005-42, Appendix E). The actual data from this assessment were not validated at the time of the database preparation and therefore are not summarized in the tables or figures. However, the unvalidated data were entered into the database for potential future use.

The following section provides key background information for the study and includes a description of study boundaries and media of interest. An overview of the data gap assessment approach is discussed in Section 1.3.

1.2 BACKGROUND

This Data Gap Analysis is an initial step in the process of assessing potential risks in the Columbia River. This section defines the study boundaries and study media and provides an overview of where this work fits into the regulatory process for the site.

1.2.1 Study Boundaries

The longitudinal (river reach) and lateral boundaries for this study were determined differently. The longitudinal boundaries were determined as an initial task of this study, while the lateral boundaries were defined in advance, to coordinate with current work in the 100/300 Area RCBRA. Details of these determinations are provided below.

1.2.1.1 Longitudinal Study Boundaries (River Reach). The *Columbia River Component of the River Corridor Baseline Risk Assessment: Basis and Assumptions on Project Scope* (DOE/RL-2004-49) broadly defines the river in terms of length and width. A general location map of the area is shown in Figure 1-1. The preliminary study area of the Columbia River Component consists of Grand Coulee Dam, located upstream of the Hanford Site boundary, downstream to Astoria, Oregon, near the mouth of the river (Figure 2-1). This Data Gap Analysis begins with an assessment of the same section of river, which is referred to as the Study Area in this document.

The initial task for this study was to determine whether data gaps should be assessed within the entire Study Area or whether a smaller area for focused study from the Hanford Site to a point downriver would be representative and appropriate. The final downstream boundary for this data gap assessment was thus determined after a review of the existing data and an evaluation of the nature and distribution of historical releases from the Hanford Site. This downstream boundary is defined as the most downstream point at which Hanford Site-related contaminants

exceed risk-based regulatory criteria. The discussions of how this boundary was determined and its appropriate location are provided in Sections 2.4 and 4.2, respectively. This focused area of assessment is referred to as the Primary Study Area in this document.

1.2.1.2 Lateral Boundaries. The lateral boundaries of this study were set to both complement and integrate with the boundaries of the 100/300 Area RCBRA and the associated Inter-Areas Shoreline Assessment Study. The study area for the 100/300 Area RCBRA included the right[2] shoreline of the river, including riverbank seeps, and a near-shore portion of the river extending to a water depth of 1.8 m (6 ft) from the low-water mark (Figure 1-2). The low-water mark is identified by a "Green Line" where periphyton remains green all year long. This longitudinal area of study encompassed the reach of the river intersected by the groundwater plumes coming from the 100/300 Area operations. The Inter-Areas study followed the same approach, but focused on the shoreline sections in nonoperational areas located between reactor areas. Data within these two study areas used in the 100/300 Area RCBRA are considered adequate for the purposes of evaluating risks within the near-shore areas.

This Data Gap Analysis is designed to identify data gaps in both the composition of the data set (e.g., number and types of samples per analyte) as well as in the location of samples. The way this analysis was conducted to coordinate with the 100/300 Area RCBRA is as follows:

- For the purposes of determining whether the composition of the existing data set (e.g., number of analyses per compound) is adequate for risk assessment, the entire data set for the Columbia River Component (CRC) was used. This includes data from all parts of the river, both left and right (facing downriver) of the Green Line, collected for the 100/300 Area RCBRA and other studies.

- For the purposes of determining where additional sample locations may be required, only the data from the left side of the Green Line were considered. This area includes the islands as well as the shore on the left side of the river. This is because the sampling program in the area right of the Green Line was the focus of extensive effort and review in the 100/300 Area RCBRA and the Inter-Area study, and thus the number and location of samples in that area were accepted as adequate. The number and location of samples left of the Green Line were not evaluated by those studies, however, so this was the explicit focus of the locational part of the Data Gap analysis.

- From the southern property boundary of the Hanford Site to McNary Dam, the lateral area of study extends from the left to right shore of the river, including sloughs, for both purposes.

This approach provides a means of reviewing and using the extensive data set collected during the 100/300 and Inter-Area assessments. However, this Data Gap Analysis is not intended to be a risk assessment. The purpose of this evaluation is to review existing data, assess their usefulness, and identify potential data gaps.

[2] For ease of reference within this report, the terms "left" and "right" are used when referring to the river banks. These terms reflect the view when facing downriver, which is generally north to south

1.2.2 Environmental Media of Interest

As with the study boundaries, the media of interest for this Data Gap Analysis were selected to complement the media evaluated by the 100/300 Area RCBRA and Inter-Area study. On the Hanford Site, the 100/300 Area RCBRA and Inter-Area study considered shoreline soils, groundwater, seeps, and springs from the riverbank above the waterline; and surface water, sediment, and aquatic biota from the shoreline area to the right of the Green Line. This Data Gap Analysis is focused strictly on the Columbia River and therefore considers only surface water and sediment. Downstream of the Hanford Site, shoreline soil and sediment, including beach, island, and slough areas, are also included.

The river islands are included in the assessment on a selective basis because many of these are only infrequently inundated and would have limited exposure to Hanford Site contaminants transported via surface water or sediment. However, depositional areas at the edges of these islands may present an exposure route if contaminants are present at upstream locations. For this reason, the following factors were considered to determine an assessment approach for individual islands:

- Does a potential Hanford Site contaminant source exist directly upstream?
- Do potential exposure routes exist?
- Has the island been adequately characterized in previous studies?

If the island has not been characterized and is located immediately downstream of a potential source area, then it was included as part of this Data Gap Analysis.

Because the purpose of this study is to assess data needs for a possible screening-level risk assessment, biota and groundwater results have not been evaluated quantitatively in this report. However, the list of compounds detected in biota and groundwater was reviewed for general consistency with the starting list of detected compounds in surface water and sediment to ensure that the final Site Analyte List was sufficiently representative of all media.

The methods used to complete the Data Gap Analysis are summarized below.

1.3 OVERVIEW OF DATA GAP ANALYSIS APPROACH

The Data Gap Analysis followed a logical sequence of steps designed to systematically evaluate the data for each section of the river. These steps form the organizational structure of subsequent sections of the report. The methodology for completing each of these steps is described in Section 2.0, while the results of each step are presented in sequence in Sections 3.0, 4.0, and 5.0.

Data were reviewed to assess the adequacy of both the number and location of samples and the number and type of chemical analyses. Because of the large size of the data set, this evaluation was implemented in a linear process that consisted of the following steps.

Step 1 Compile existing relevant data into one comprehensive database.

Step 2 Update existing conceptual site model: How do contaminants originate and move in the river?

Step 3 Evaluate spatial and temporal distribution of the existing data to determine adequacy of aerial sample coverage: Are there enough samples and sufficient analytes in the right places, given the conceptual model?

Step 4 Define the Primary Study Area for the Data Gap Analysis, based on historical Hanford Site operations and river data.

Step 5 Identify Site Analytes for detailed mapping and review of analytical results.

Step 6 Identify preliminary data gaps for Site Analytes.

These steps are described in Section 2.0, which provides a full description of the evaluation methodology.

1.4 THE COLUMBIA RIVER IN THE HANFORD SITE SUPERFUND PROCESS

This Data Gap Analysis is being conducted in support of the larger Superfund process at the Hanford Site, which was initiated in 1989 to address contamination at the Hanford Site. Under Superfund, sites are investigated in a series of defined regulatory steps. The Hanford Site-specific process is illustrated in Figure 1-3, which describes a logical path through the fundamental stages of the RI, risk assessment, and remediation.

In 1991, the Tri-Parties (i.e., EPA, DOE, and Ecology) agreed to a "bias for action" approach to the CERCLA process for the Hanford Site. This agreement streamlined the RI/feasibility study (FS) process to begin remediation of contaminated waste sites. At many waste sites associated with the 100 Area source operable units (OUs), remedial actions were completed prior to September 2005 under the Environmental Restoration Contract. The remedial designs that supported these cleanup actions were based on the requirements established in the interim action records of decision, amendments, and explanation of significant differences. All of the Hanford Site production reactors have been deactivated, and waste sites within each of the 100 Area reactor areas are in some stage of cleanup, decommissioning, or restoration.

Full-scale remediation of the 300 Area OUs began in July 1997. Additional waste sites were identified as remaining sites that require additional characterization to determine whether remedial actions are warranted. Following the results of additional sampling, these sites may be added to the scope of the 300 Area OU remediation at a later time. The 100/300 Areas are currently at the risk assessment stage, which will determine the adequacy of the interim actions initiated in the mid-1990s. The risk assessment may also identify other areas where unacceptable risk may exist following completion of the interim actions.

The Columbia River, since it receives contaminants from many sources besides the Hanford Site, has not been designated as a Superfund OU, but, at the request of the Tri-Parties, is being investigated by a similar process. From a Superfund perspective, it is in the early stages of the investigation. Although many independent studies have been conducted on the river, they have not been consolidated into a comprehensive assessment of the nature and extent of contamination in the Columbia River. The process began with WCH-91 and is being continued here with this Data Gap Analysis.

Figure 1-1. Site Location Map.

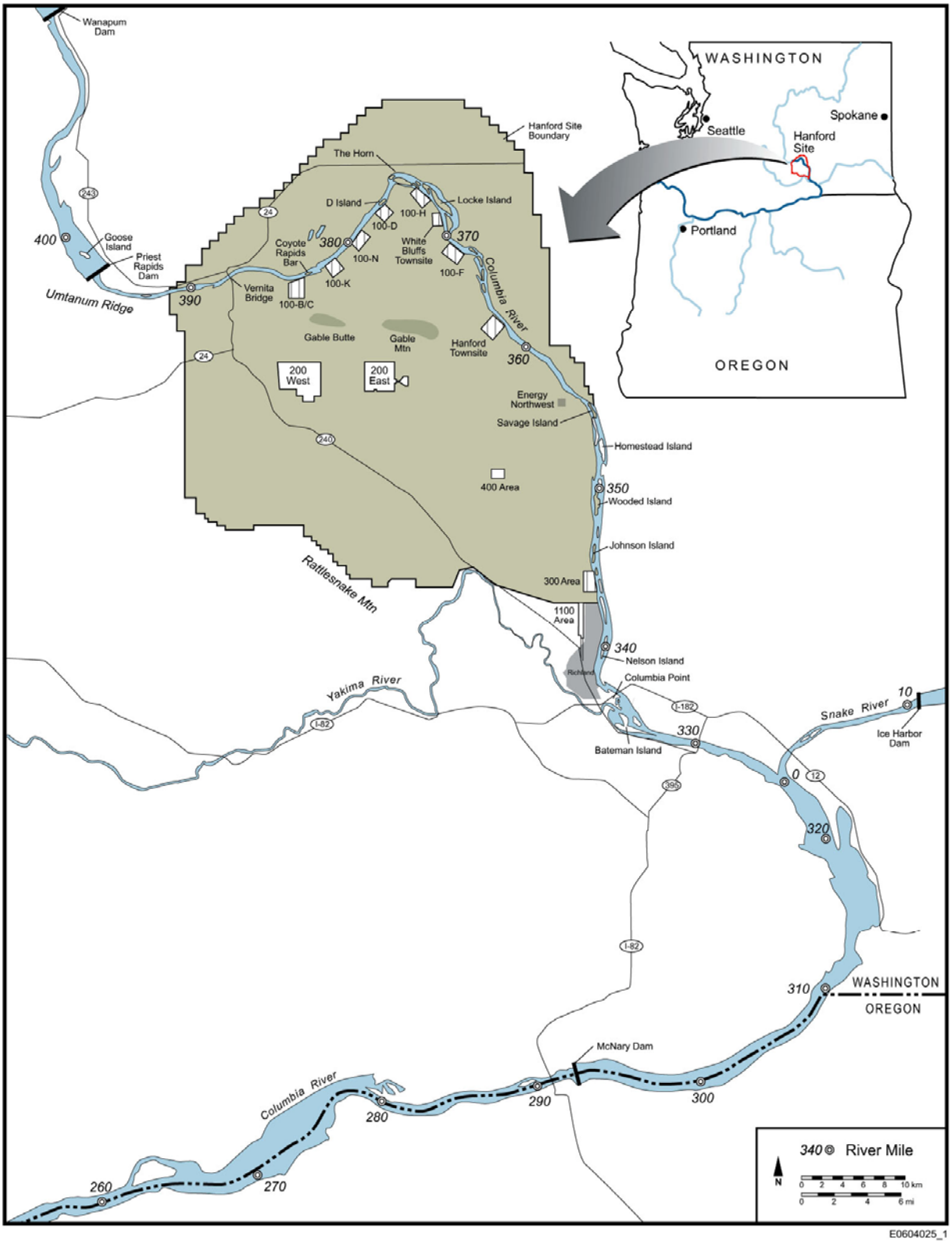


Figure 1-2. Hanford Reach Cross-Section Study Area Definition.

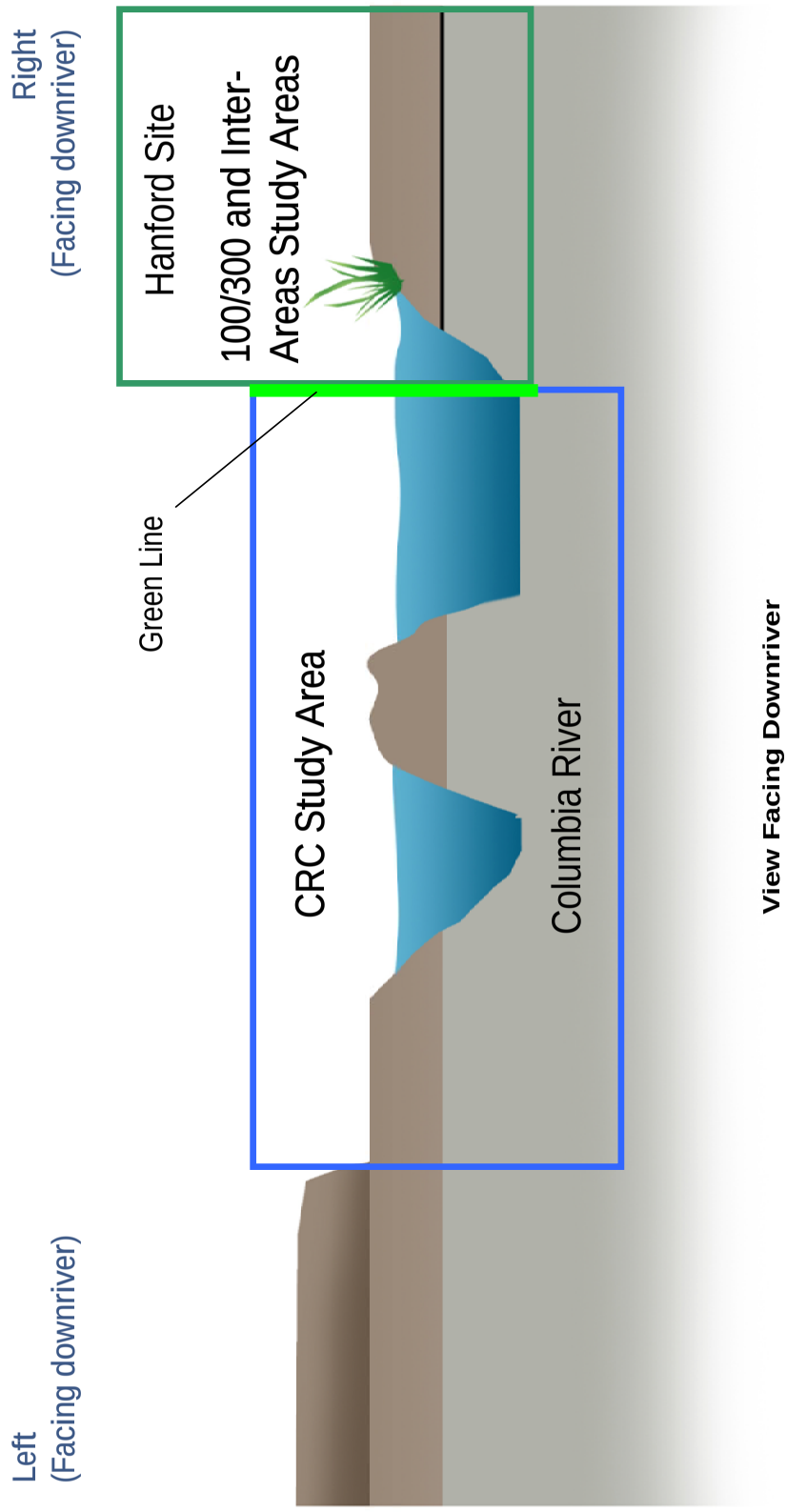
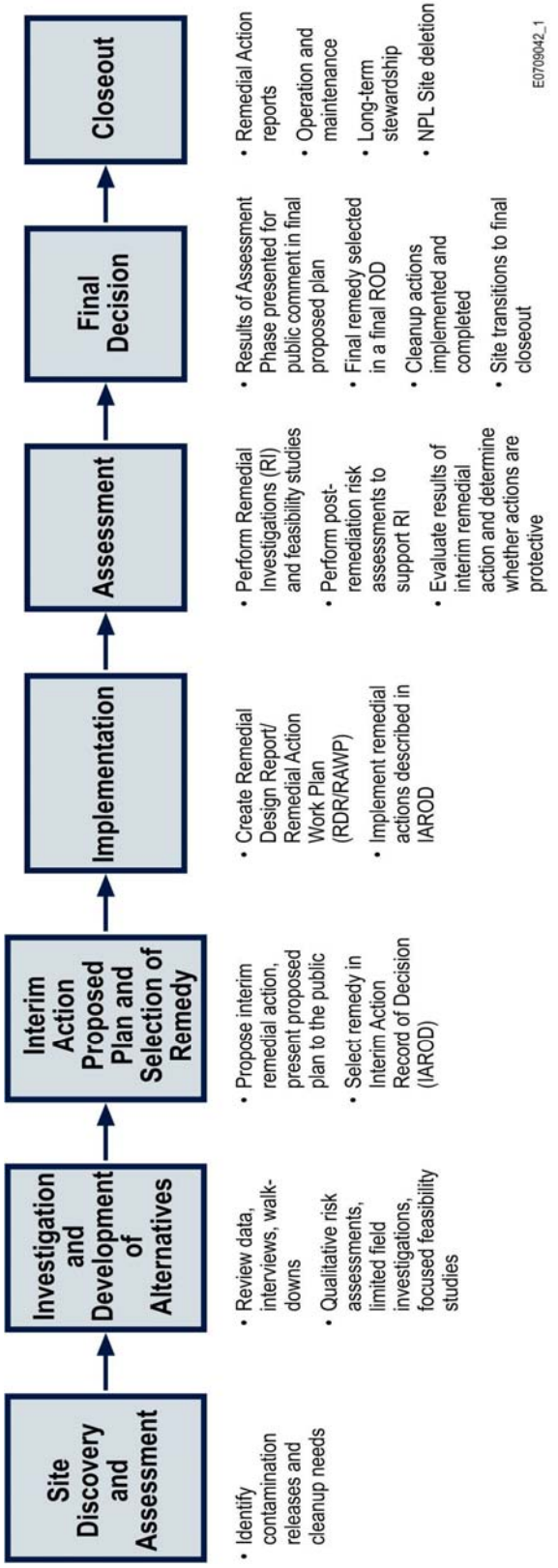


Figure 1-3. Hanford Interim Action Process.



2.0 DATA EVALUATION METHODS

As described in Section 1.0, the existing Columbia River data set was evaluated to identify potential surface water and sediment data gaps and was completed as a six-step process that systematically evaluated both the nature and distribution of contaminants in the river, as well as the size and composition of the existing data set in areas upriver, adjacent to, and downgradient of, the Hanford Site. These tasks were designed to do the following:

- Compile existing data sets and acquire new data not previously available
- Determine the most appropriate area of study for evaluating potential effects from Hanford Site contaminants in the Columbia River
- Identify any general areas of the river where more samples may be needed to adequately characterize contaminant distribution
- Identify analytes for which more analyses may be needed to increase the robustness of the existing data set.

The following sections describe in detail the six-step process by which existing Hanford Site information was collected, reviewed, and evaluated to identify potential data gaps. Each subsection describes the methodology used to complete each step, and the results of the evaluation are discussed in subsequent sections of this report. The correlation between these methodology subsections of Section 2.0 and the parts of Sections 3.0, 4.0, and 5.0 presenting the results is shown in Table 2-1.

2.1 STEP 1 – DATABASE DEVELOPMENT

The first step in the process was to conduct a comprehensive review of the relevant literature and data on the Columbia River and to compile relevant sample data into a single combined database. These two activities formed the foundation for subsequent tasks.

For the literature review, more than 1,600 studies and reports concerned with the Hanford Site were screened, and of these approximately 200 were selected as relevant to this Data Gap Analysis. These documents, listed in Appendix A, were reviewed and used as primary resources for the development of the initial site understanding and subsequent data evaluations.

In addition, river analytical data were obtained electronically from a variety of sources and combined into a single electronic database that could be queried, crosschecked, and used to support mapping, data evaluation, and reporting needs of the project. The following describes the sources of data imported into the database and the quality control (QC), standardization, and usability evaluations conducted to confirm that the final combined data set was accurate, consistent, and scientifically sound.

2.1.1 Database Sources

The combined database created for this Data Gap Analysis consists of data from the following sources:

- The original CRC database
- U.S. Army Corps of Engineers
- Inter-Area sample location data
- Data used in the 100/300 Area RCBRA
- Mid-Columbia River Sediment Data provided by EPA Region 10, Watershed Restoration Unit, on June 8, 2007
- 2004 and 2005 data from the Pacific Northwest National Laboratory (PNNL).

The original CRC database was a compilation of data obtained from the detailed data collection effort conducted as part of *Existing Source Information Summary Report Compilation/Evaluation Effort: December 2004 to September 2005, Columbia River Component of the River Corridor Baseline Risk Assessment* (WCH-64) and WCH-91. As part of those efforts, data were obtained, reviewed, and selected by a team composed of researchers from universities, PNNL, WCH, and a Native American consulting firm through a process that involved extensive review and input by DOE, Trustees, and regulators. The extensive details of the data collection and evaluation method are provided in those documents, particularly WCH-64, and specific decisions about what data to include or exclude were made by those researchers. Because of the extensive training and review that attended the development of the CRC database, further review as part of the Data Gap Analysis was considered to be unnecessary.

The original CRC database was created in Microsoft® Access™ and was used as a framework for the development of the combined database created for this Data Gap Analysis. As part of this Data Gap Analysis, additional fields and/or tables were added to the original database to incorporate information from the other data sources that did not have a place in the original CRC database structure and to incorporate other data-specific information, such as ecological and human health benchmarks.

The Inter-Areas analytical data were imported but not used in the analysis because they had not been validated at the time this report was written. However, sample location coordinates were imported and included in the total number and location of samples.

The 100/300 Area RCBRA data are updated data from the Guided Interactive Statistics Decision Tools (GiSdT) program downloaded from the Data Management website (http://rcbra100-300.neptuneinc.org/rcbra100-300/home/index.xml) on June 11, 2007. The PNNL data from the Surface Environmental Surveillance Project (SESP) were not previously included in the original CRC database due to the timing of the issuance of that document.

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The data used to create the combined database for this Data Gap Analysis are summarized in Table 2-2, which shows the sources of the data, the medium, the river section where the samples were located, and the sampling date range.

This database is not inclusive of all available data from the entire 1,931 km (1,200 mi) of the Columbia River; rather, it was constructed using data sets focused on likely areas affected by Hanford Site contaminants. Data from beyond approximately 32 km (20 mi) upriver of the Hanford Site were excluded, as were large EPA data sets from the lower Columbia River (downriver of McNary Dam), because these data were highly influenced by other industrial and agricultural sources and the focus of this Data Gap Analysis is on Hanford Site-related sources. Although other numerous contaminant sources exist both upriver and downriver of the Hanford Site, this study is focused on evaluating data needs relative to potential effects in proximity to known Hanford Site source areas. As with other industrialized rivers, there are a significant number of contaminants sources to the Columbia River. The majority of significant non-Hanford Site source areas are located downriver (e.g., below McNary Dam) from the Site. Data collected during the investigation and possible remediation of these down river sites was not included in this assessment. Only those data that were collected in connection with the past Hanford Site investigations were included.

2.1.2 Quality Assurance and Quality Control

Because data were generated by several entities, variation exists in reporting formats and other characteristics. As part of the import process, a program of continual data quality assurance (QA) measures was implemented to check and recheck the data to ensure that queries would run smoothly and accurately. Variations in data format or inconsistencies in reporting were primarily associated with the following:

- Duplicate records
- Sample location and coordinate identification
- Sampling date verification
- Chemical Abstracts Service (CAS) number issues including entry errors, unknown CAS numbers, and missing compound records in the database
- Truncated sample site fields.

These issues affected a very small proportion of data and were identified and resolved without issue.

2.1.3 Data Standardization

In order to analyze and interpret the data contained in the combined database, some standardization was necessary. Standardization of CAS numbers and constituent names was done by resolving numerous CAS number discrepancies in the original CRC database (i.e., adding missing compounds, determining the values of missing CAS numbers, and editing incorrect CAS numbers) and checking that CAS numbers in the other data sets aligned with the CAS numbers in the database. This included adding new compounds when necessary, checking that constituent names aligned with CAS numbers, and assigning CAS numbers when only constituent names were provided. In addition, units were standardized so that the results

could be analyzed and compared to benchmark values. For surface water samples, the results were standardized to picocuries per liter (pCi/L) for radionuclides and to milligrams per liter (mg/L) for most other compounds. For sediment samples, the results were standardized to picocuries per gram (pCi/g) for radionuclides and to milligrams per kilogram (mg/kg) for most other compounds. Units of benchmark values were also standardized. Depth information for sample locations was standardized to inches and feet, when possible, because these were the units recorded for most of the data, and because these values are most readily understood by the many future users of this document.

2.1.4 Data Usability Assessment

Data usability is the process of determining that the quality of the data is adequate for their intended end use. The quality of the analytical data compiled is linked to the work plans and analytical methods used during collection and analysis of environmental samples. For this Data Gap Analysis, usability of the data was assigned based on the documented QA/QC procedures used for different sampling programs. Table 2-3 provides a summary of data sources and assigned data quality categories. A similar assignment of data usability was used as provided for in WCH-64 and WCH-91.

The following data quality categories were previously developed (WCH-64) and have been adopted in this Data Gap Analysis to identify relative data usability.

Category 1 (QA1) – Data are of known quality and are considered to be acceptable for decision making in the Data Gap Analysis report.

Category 2 (QA2) – Data are of partially known or suspect quality because QA/QC criteria are either incomplete or were not discussed or found. These data are considered suitable for qualitative use and may be considered suitable for further evaluation based on project-specific DQOs and intended end uses.

Category 3 (QA3) – Data are of unknown quality. The data may have sample concentrations but lack an adequate level of supporting QA/QC information or are summarized and only provide ranges of concentrations. These data can be used on a limited or provisional basis for qualitative purposes with other QA1 or QA2 data.

Category 4 (QA4) – No analytical data were reported.

After this task was complete, the database was considered to be ready for use in completing the data gap assessment. The structure of the database and the presence of location coordinates for most data points enabled data to be queried and mapped according to a wide array of characteristics.

2.2 STEP 2 – UPDATE CONCEPTUAL SITE MODEL

As part of the development of the initial understanding of the site, the conceptual site model (CSM) of contaminant sources, transport, and deposition in the river, as presented in previous documents, was reviewed and updated. The understanding of contaminant sources and transport obtained by this review was fundamental to evaluating where additional sampling may be necessary in the subsequent spatial analysis of Step 3.

The CSM was based on the information in previous studies and representations, as well as on direct observations of river characteristics conducted during a 2-day boat trip in April 2007. This CSM focuses on the main channel and left shore of the river and the islands located immediately downstream, whereas the 100/300 Area and Inter-Area investigations focused on the shore to the right of the Green Line as defined previously. The primary exposure points described in this CSM are surface water and sediments within the main channel of the river and limited soils from selected islands within the river. The area to the right of the Green Line is currently being investigated and evaluated as part of the 100/300 Area and Inter-Area RI/FS investigations. Section 3.0 provides a CSM for the main river channel, which is the primary focus of this Data Gap Analysis.

2.3 STEP 3 – EVALUATE SPATIAL AND TEMPORAL DISTRIBUTION

This step consisted of a large-scale review of sample locations relative to the Hanford Site and other sources, and a specific review of the analyses from multiple sampling rounds to confirm that samples were analyzed for an appropriately wide range of compounds.

The review of sample locations was conducted to evaluate whether samples from additional locations are necessary, both near the Hanford Site and in upstream and downstream areas. This evaluation drew on both the understanding of river flow and sedimentation patterns, as derived from the CSM, as well as documented source areas described in many documents and reflected in analytical data in the database. This evaluation was conducted for the entire Study Area, defined previously as the reach of the Columbia River extending from Grand Coulee Dam to the Pacific Ocean.

To support this analysis, the Study Area was divided into three river sections, as follows (Figure 2-1 shows each of the river sections):

- River Section I – The section of the Columbia River is upriver from the Hanford Site and extends from the Vernita Bridge (River Mile [RM] 388, considered the upstream boundary of the Hanford Site) to Grand Coulee Dam.

- River Section II – This section of the Columbia River extends from the Vernita Bridge (RM 388) downriver to McNary Dam (RM 292) and includes the 82 km (51-mi) stretch referred to as the Hanford Reach.

- River Section III – This section of the river extends from below McNary Dam to the outlet of the Columbia River at the Pacific Ocean.

While data from the entire upriver section (Vernita Bridge to Grand Coulee Dam) were reviewed and considered in this data gap assessment, only the sediment and surface water sample results directly upriver of the Vernita Bridge (including the Priest Rapids pool) were incorporated into the database. For example, polychlorinated biphenyl (PCB) and metals results from areas well upstream of the Hanford Site (e.g., near the Teck Cominco Mine in Trail, British Columbia) were considered when evaluating the surface water and sediment results from the Priest Rapids pool. However, data from these distant areas were not numerically combined with the Priest Rapids pool data in the calculation of upstream or background concentrations because these relatively elevated upriver results would skew the average background concentration directly upriver of the Hanford Site.

Sample locations for both surface water and sediment were plotted on maps for these three river sections. From these plots, the locations of samples relative to known source and deposition areas were evaluated visually by closely examining each portion of the river, particularly in areas downstream of known source areas, around islands and sloughs, and in other areas of potential contaminant movement.

In addition, the number of samples for each analytical suite (radionuclides, metals, etc.) was tabulated for the three sections to provide a numerical summary of the sampling density in each section. This tabulation was designed to evaluate analytical density and composition for each section, specifically, whether the analytical suite was adequately represented in the data set. Thus, the density of samples as indicated by both location and analytical suite was used to evaluate the spatial adequacy of the data set.

For the temporal analysis, records of sample locations with multiple sampling dates were reviewed and compared to the types of analyses (or analytes) requested. This information was used to determine if the area and media have been adequately characterized.

2.4 STEP 4 – IDENTIFY PRIMARY STUDY AREA

As stated in Section 1.0, the focus of the Data Gap Analysis is to identify potential surface water and sediment data gaps and additional samples that may be necessary to support an eventual screening-level risk assessment. After the data set of the entire Study Area was reviewed for sufficiency in terms of density and composition, the data and historical literature were examined in closer detail to determine the river section with the highest concentrations of Hanford Site residuals. The areas with the highest concentrations would be associated with the highest potential for risk. Correspondingly, downstream locations with lower concentrations would also have lower potential risk. This Data Gap Analysis is thus focused on the section of the river with highest concentrations of Hanford Site residuals, the boundaries of which were determined in this step. This stretch is referred to as the Primary Study Area.

In general, the Primary Study Area was identified by reviewing the existing data set and literature, comparing the dam construction timeline to the documented discharge of Hanford Site-related contaminants to the river, and estimating current activity levels of radionuclides historically detected in downstream locations. A phased approach was used that assumes that the highest concentration of radionuclides would reside behind the nearest downstream dam during the maximum output of radioactive material to the Columbia River, which was during the mid-1950s to mid-1960s. At that time, the nearest downstream dam was McNary, which was constructed from 1947 to 1954. Other downstream dams at that time included Bonneville (completed in 1937) and The Dalles (completed in 1957). John Day Dam was constructed between 1958 and 1971. Radionuclide sediment data were reviewed from above Priest Rapids Dam to Astoria, Oregon (river mouth), and the location of the maximum concentrations for Hanford Site-related radionuclide elements in sediments was identified as being behind McNary Dam. These maximum data were normalized by half-life decay calculations to 2007 concentrations to assess the current potential exposure point concentrations. The normalized concentrations were then compared to applicable human health criteria and ecological benchmarks (Section 2.5). If the sediments in depositional area(s) closest to the source area(s) do not exceed applicable screening criteria, then lower concentrations downstream would

likewise not exceed these criteria. If sediments exceeding screening criteria were detected, then the next downstream depositional area was evaluated.

Based on the results of this evaluation, the Primary Study Area was determined to be the river reach between Vernita Bridge and McNary Dam. The result of this evaluation (i.e., definition of the Primary Study Area) is given here to facilitate the discussions in this report. Section 4.0 presents the detailed results of this process.

2.5 STEP 5 – IDENTIFY SITE ANALYTES

This step was undertaken to identify specific compounds for which the detailed Data Gap Analysis was conducted. These compounds, referred to as "Site Analytes," were derived from a consideration of earlier studies (specifically the 100/300 Area RCBRA), site and background concentrations, and other factors, as described below. While the spatial analysis of Step 3 considered this question in terms of general analytical category (volatiles, metals, etc.), this step uses a more detailed, compound-specific approach designed to meet the needs of a risk assessment, which evaluates compounds on a compound-specific basis. The data for this evaluation are the surface water and sediment in the Primary Study Area identified in Step 4.

The initial list of compounds for this evaluation consisted of all detected compounds in samples from the Primary Study Area. Natural water chemistry parameters such as nutrients, dissolved oxygen, carbonates, and other constituents were not included. Because the Primary Study Area for focused data gap evaluation consists of the reach between Vernita Bridge and McNary Dam (River Section II), this "Hits Only[3]" list of detected compounds was then compared to the 100/300 Area contaminants of potential concern (COPCs) identified for surface water and sediment as part of the 100/300 Area RCBRA. For the purposes of this assessment, these are the compounds listed in Tables 4-17 and 4-18 of that document. The focused COPC list from the 100/300 Area RCBRA was developed during several rounds of submittals, reviews, and comments from EPA, Ecology, and the Trustees that occurred during the preparation of the 100/300 Area RCBRA and supporting documents. Accordingly, the focused COPC list from the 100/300 Area RCBRA is considered relevant for this data gap evaluation. The 100/300 Area RCBRA COPCs are in the list of detected compounds in Tables 5-1 and 5-2.

The final list of Site Analytes for the Data Gap Analysis was obtained from the integrated "Hits Only" list (Tables 5-1 and 5-2) by a sequential five-step process, which served to focus analysis efforts on those compounds most likely to be of concern in subsequent risk assessment or characterization efforts. This process of narrowing the initial list to the final list of Site Analytes consisted of a series of data reviews, as follows:

Starting List: Detected compounds from the Primary Study Area, including 100/300 Area RCBRA-focused COPCs

Data Filters:

1. Compare maximum detected concentration to lowest of either the human health or ecological risk-based values

[3] "Hits Only" tables are summary tables that contain only those compounds or elements that were detected above the laboratory reporting level in at least one sample (per medium). Other compounds that were analyzed for, but not detected, are not listed in the tables.

2. Compare to site-specific background concentrations

3. Remove known laboratory contaminants

4. Evaluate low frequency of exceedance

5. Revise according to additional considerations: site use, groundwater and biota data, etc.

Compounds identified from this effort are the Site Analytes for detailed evaluation in Step 6, which involves extensive mapping and data density assessments to identify the final array of data gaps for the Hanford Site. The final Site Analyte List represents a combined list of human health and ecological Site Analytes. The following subsections detail the methods used in the evaluation for determining the Site Analytes.

2.5.1 Comparison to Human Health and Ecological Risk Criteria

The first step in the process was to compare concentrations to risk-based criteria and benchmarks. Because concentrations above these criteria may be associated with potential risk, analytes with concentrations above benchmarks are particularly important to fully characterize, and are therefore the primary focus of this Data Gap Analysis. For this analysis, the maximum detected concentration of each constituent was compared to the lower of either the human or ecological criteria.

As part of this step, readily available risk-based screening criteria for human health and ecological receptors were identified for compounds in the "Hits Only" list (Tables 5-1 and 5-2). In general, criteria were the same as those used in the 100/300 Area RCBRA where available, were drawn from the same sources as used in that report, or were from other state or federal criteria documents. For each compound, the lower of either the human health or ecological criteria was selected as the screening value. The specific values are shown in Section 5.0 for human health criteria and ecological benchmarks, and the sources of these values are described below. Section 5.0 provides a discussion of the results of this evaluation.

2.5.1.1 Human Health Screening Criteria. The human health benchmarks used to evaluate surface water and sediment data included both risk-based concentrations, which reflect potential health effects, as well as other regulatory standards and criteria, as available. For each compound, risk-based or regulatory criteria from a variety of sources were reviewed, and then the lowest value from among the sources was chosen as the final human health screening value. No human health criteria were used directly in the 100/300 Area RCBRA, which evaluated risk by exposure calculations; however, this approach is similar to that used in WCH-91, and therefore many of the values are the same. However, the selection of the appropriate criteria for this Data Gap Analysis also relied on the EPA Region 10 Memorandum dated April 17, 2007 (EPA 2007a), which provided recommendations for human health screening at EPA Region 10 CERCLA and *Resource Conservation and Recovery Act of 1976* sites. As per this memorandum, risk-based values for noncarcinogenic effects were adjusted downward by a factor of 10 to reflect a hazard quotient of 0.1; cancer-based values are based on 1E-06 risk and were thus unadjusted.

Surface water in the Columbia River is used for recreational purposes (i.e., boating, fishing, swimming) as well as a source of potable water. For surface water nonradioisotopes, the following criteria were considered:

- Region 6 Human Health Medium Specific Screening Levels, accessed online at http://www.epa.gov/earth1r6/6pd/rcra_c/pd-n/screen.htm (EPA 2007b).

- National Recommended Water Quality Criteria, accessed online at http://www.epa.gov/waterscience/criteria/wqcriteria.html (EPA 2006b). Values for consumption of water and organisms used.

- *2006 Edition of the Drinking Water Standards and Health Advisories*, accessed online at http://www.epa.gov/waterscience/criteria/drinking/ (EPA 2006a).

- EPA (2004). Region 9 Preliminary Remediation Goals (PRGs) Table, accessed online at http://www.epa.gov/region09/waste/sfund/prg/index.html#prgtable (EPA 2004b). Values presented represent "tap water" values. These values are risk-based concentrations protective of drinking water exposures.

- National Primary Drinking Water Standards, accessed online at http://www.epa.gov/safewater/contaminants/index.html#mcls (EPA 2003). Values for maximum contaminant levels (MCLs) presented.

- Ecology Cleanup Levels and Risk Calculation (CLARC) Searchable Database, Method B Surface Water Standards and Method B Unrestricted Land Use Values for Soil, accessed online at https://fortress.wa.gov/ecy/clarc/Reporting/ParameterQuery.aspx (Ecology 2007). The lower of noncancer and cancer based values were applied.

For radioisotopes, the surface water benchmark values were drawn from *Soil Screening Guidance for Radionuclides: User's Guide* (EPA 2000).

This source was also used in WCH-91. The radiological benchmark values selected in this source document consist of radiological drinking water MCLs since surface water values have not been developed to evaluate direct exposure.

There are no published human health criteria for sediment. Therefore, available soil benchmarks were used for human health sediment screening criteria. Generally, the use of soil benchmarks for the evaluation of sediment concentrations is very conservative because the frequency of access to and contact with sediments is much lower than those for soils in a residential setting. The soil benchmarks used to evaluate nonradiological compounds in sediment in this report were drawn from the following sources:

- *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites*, accessed online at http://www.epa.gov/superfund/health/conmedia/soil/index.htm#fact (EPA 2002).

- Soil Screening Guidance: User's Guide, accessed online at http://www.epa.gov/superfund/health/conmedia/soil/index.htm#fact (EPA 1996).

- Region 9 Preliminary Remediation Goals (PRGs) Table, accessed online at http://www.epa.gov/region09/waste/sfund/prg/index.html#prgtable (EPA 2004b). Values presented represent "residential soil" values.

- Ecology Cleanup Levels and Risk Calculation (CLARC) Searchable Database, Method B Surface Water Standards and Method B Unrestricted Land Use Values for Soil, accessed online at https://fortress.wa.gov/ecy/clarc/Reporting/ParameterQuery.aspx (Ecology 2007). The lower of noncancer and cancer based values were applied. Method B unrestricted land use values for soil (the lower of carcinogenic and noncarcinogenic concentrations) were used.

- Region 6 Human Health Medium Specific Screening Levels, accessed online at http://www.epa.gov/earth1r6/6pd/rcra_c/pd-n/screen.htm (EPA 2007b).

Benchmarks for radiological compounds consisted of the cleanup values cited in *Remedial Design Report/Remedial Action Work Plan for the 100 Area* (DOE/RL-96-17), which was also used as a benchmark source in WCH-91.

As noted, the lowest value among the screening criteria provided above (for each medium) was then used as the "final" human health screening level for comparison to surface water and sediment concentrations in the Study Area.

2.5.1.2 Ecological Screening-Level Benchmark Sources. Ecological screening-level benchmarks for surface water and sediment were either the same as those used in the 100/300 Area RCBRA or were drawn from the same sources. These values, presented in Appendix H-2 of that document and included in Section 5.0 of this report, are concentrations below which effects are unlikely, and so are appropriately conservative values for distinguishing between compounds that may present a potential risk (and hence merit further examination for additional sampling needs) and those that do not (which can be eliminated provided the data set is adequate). The values themselves were selected by DOE, state or federal regulators, and the Trustees during the extensive development of the 100/300 Area RCBRA and supporting documents. These values were drawn from the following sources.

Sediment:

- *Guidance for Ecological Risk Assessment Level II – Screening Level Values*, Available from http://www.deq.state.or.us/ wmc/documents/eco-2slv.pdf (last accessed Aug 13, 2003) (ODEQ 2001)

- *RESRAD Biota for Windows*, Version 1.21 (ANL 2006) (http://web.ead.anl.gov/resrad/home2/).

- *Calculation and Evaluation of Sediment Effect Concentrations for the Amphipod Hyalella azteca and the Midge Chironomus riparius.* (Ingersoll et al. 1996)

- *Creation and Analysis of Freshwater Sediment Quality Values in Washington State* (Ecology 1997)

- "Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario" (Persaud et al. 1993)

- Ecorisk Database (Release 2.2) (LANL 2005).

Surface Water:

- *Toxicological Benchmarks for Screening of Potential Contaminants of Concern for Effects on Aquatic Biota on Oak Ridge Reservation: 1996 Revision* (Suter and Tsao 1996)
- *National Recommended Water Quality Criteria: 2002* (EPA 2002)
- WAC 173-201A, "Water Quality Standards for Surface Waters of the State of Washington"
- *RESRAD Biota for Windows*, Version 1.21 (ANL 2006) (http://web.ead.anl.gov/resrad/home2/).
- Ecorisk Database (Release 2.2) (LANL 2005).

As ecological criteria and benchmarks, these values are protective of aquatic organisms that live in or on the sediment, or which are free-swimming in the water column. These values typically reflect effects on these organisms through the mechanism of direct toxicity.

Compounds with maximum values that exceeded the lowest risk-based criteria were subject to further comparison to background concentrations, as described below.

2.5.2 Comparison to Background Concentrations

This step consisted of a qualitative and quantitative comparison of Hanford Site data to "background" concentrations. For the purposes of this report, "background" samples are those from nearby, non-Hanford Site locations not subject to contributions from the Hanford Site. These included upriver locations from above Priest Rapids Dam as well as upriver locations in the Snake and Yakima Rivers, which flow into the Columbia River downstream of the Hanford Site. Data from all of these locations are considered broadly to represent "background" conditions and were used for qualitative reviews of constituents detected in the Primary Study Area.

For numerical comparisons of Hanford Site data to background data, however, only data from the Columbia River upstream of the Vernita Bridge were used. These include data from the Priest Rapids pool downstream to the Vernita Bridge, as shown on "View A" of Appendix C. The geometric mean of these samples was calculated and used as the representative "background concentration" for direct comparison with Hanford Site sample concentrations. Nondetects were included as one-half the reported practical quantitation limit (PQL). The geometric mean was used because it is less sensitive to outlying data (high concentrations) than the arithmetic mean and therefore is a more conservative estimate of average concentrations, typically producing a lower numerical value than the arithmetic mean.

Compounds with maximum values that were below the calculated average (geometric mean) background concentration were not carried forward in the evaluation. Compounds that did exceed the background concentration were evaluated further by considering the number and location of sample results above background concentrations. Typically, compounds with

concentrations that were generally higher than background concentrations were retained for further evaluation.

2.5.3 Consideration of Laboratory QA/QC Results

This evaluation consisted of an evaluation of known laboratory contaminants. Some compounds, including common alcohols and solvents, are used in the preservation, extraction, or analysis of environmental media and are frequently detected in low levels as artifacts in environmental samples. Depending on where they are used in the process, they may also be detected in the laboratory blanks associated with the sample. In accordance with EPA guidance (EPA 1999), common contaminants were removed from the evaluation.

2.5.4 Consideration of Frequency of Exceedance

Analytes that have sufficient numbers of samples and which exceed benchmarks only rarely are generally considered to reflect a low potential for effect, unless present at very high concentrations. Analytes that exceed either ecological or human health risk screening criteria in 5% or fewer of the samples were then evaluated relative to maximum concentration and spatial distribution. The spatial distribution of analytes with <5% exceedance of screening criteria were plotted to evaluate spatial distribution. If these samples were focused in one location, the analyte was retained for further evaluation. In addition, the magnitude of the exceedance was evaluated. If the maximum reported concentration was an order of magnitude greater than screening criteria, the analyte was retained as a potential data gap. This approach applies to PQL exceedances as well as to exceedances based on actual detected values. As discussed, the magnitude of exceedance of each compound eliminated by this approach was evaluated prior to final selection of the Site Analyte List to ensure that no localized "hot spots" were overlooked.

2.5.5 Additional Consideration for Site Analyte Selection

As a final step in the development of the Site Analyte list, some additional considerations were used. Groundwater and biota data were evaluated for potential additional compounds. To complete this analysis, compounds detected in both groundwater and biota were compiled and reviewed relative to compounds detected in surface water and sediment. In addition, other factors were also considered; depending on the analyte, these included potential for site use, proximity of other sources, consistency with the 100/300 Area RCBRA, and other factors. This approach, which resulted in the addition or elimination of chemicals to the final Site Analyte list, provided flexibility and allowed a generally conservative approach to the development of the final list.

2.6 STEP 6 – IDENTIFY PRELIMINARY DATA GAPS

In this step, the Site Analytes from Step 5 were subject to detailed evaluation to identify potential data gaps. This step includes the following types of evaluation:

- Detailed mapping of the location of criteria exceedances of each of the Site Analytes in large scale maps.

- Tabulation and review of the number of exceedances versus the number of detections and the number of samples analyzed.

- Review of sample exceedance locations relative to the location of source areas, sloughs, islands, and known depositional areas for fine-grained sediment.

- Review of sample locations and types relative to the general conclusions about spatial distribution of data derived from Step 3.

- Professional judgment about the adequacy of sample location and density.

This evaluation produced two types of information:

1. A final list of compounds, referred to as Data Gap Site Analytes, for which additional analyses may be beneficial.

2. General locations where additional samples may be used to round out the data set.

These two components comprise the final findings of this Data Gap Analysis study. These findings are detailed in Section 5.0. This six-step data gap identification process is summarized in Figure 2-2.

Figure 2-1. Study Area – River Sections.

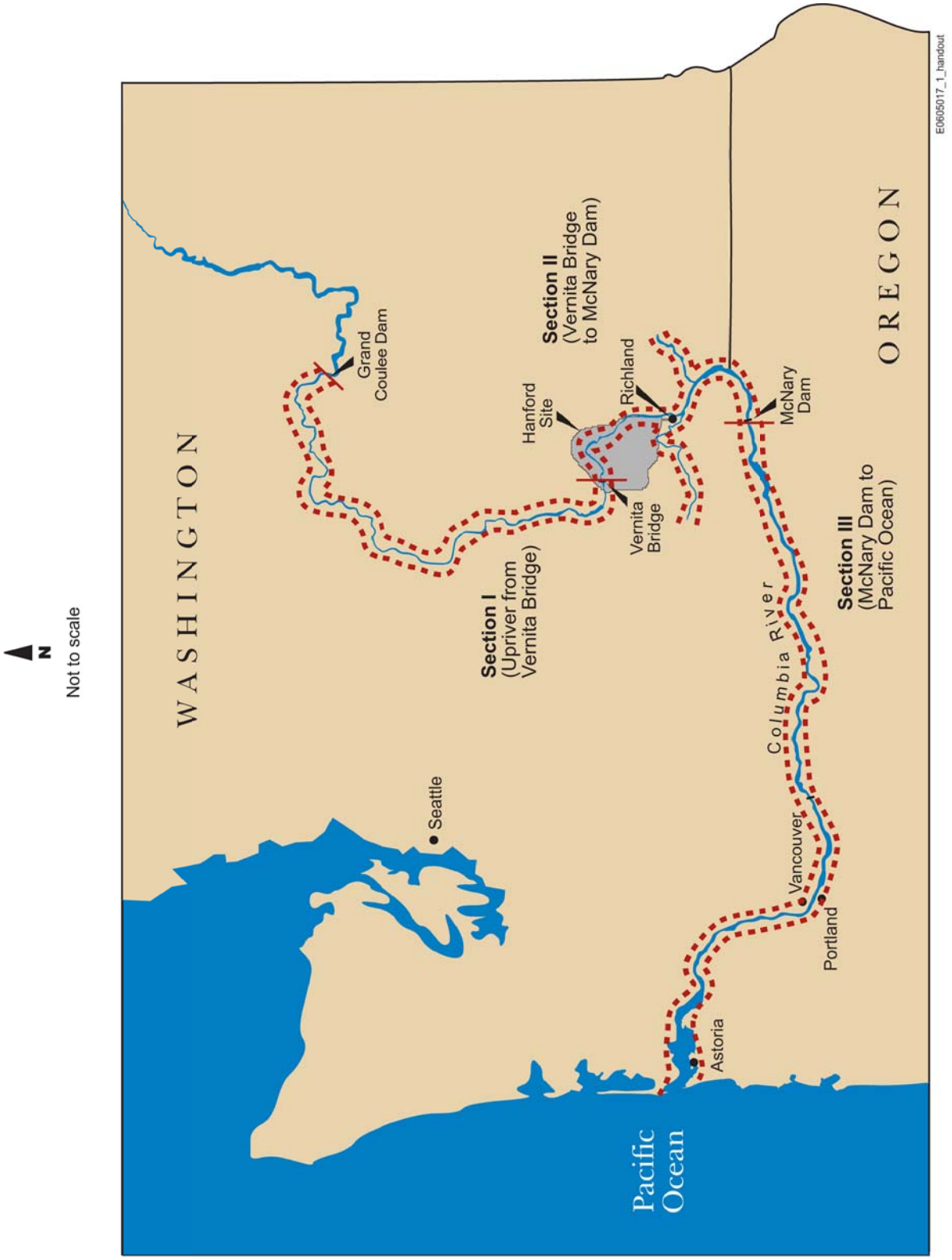


Figure 2-2. Data Gap Identification Process.

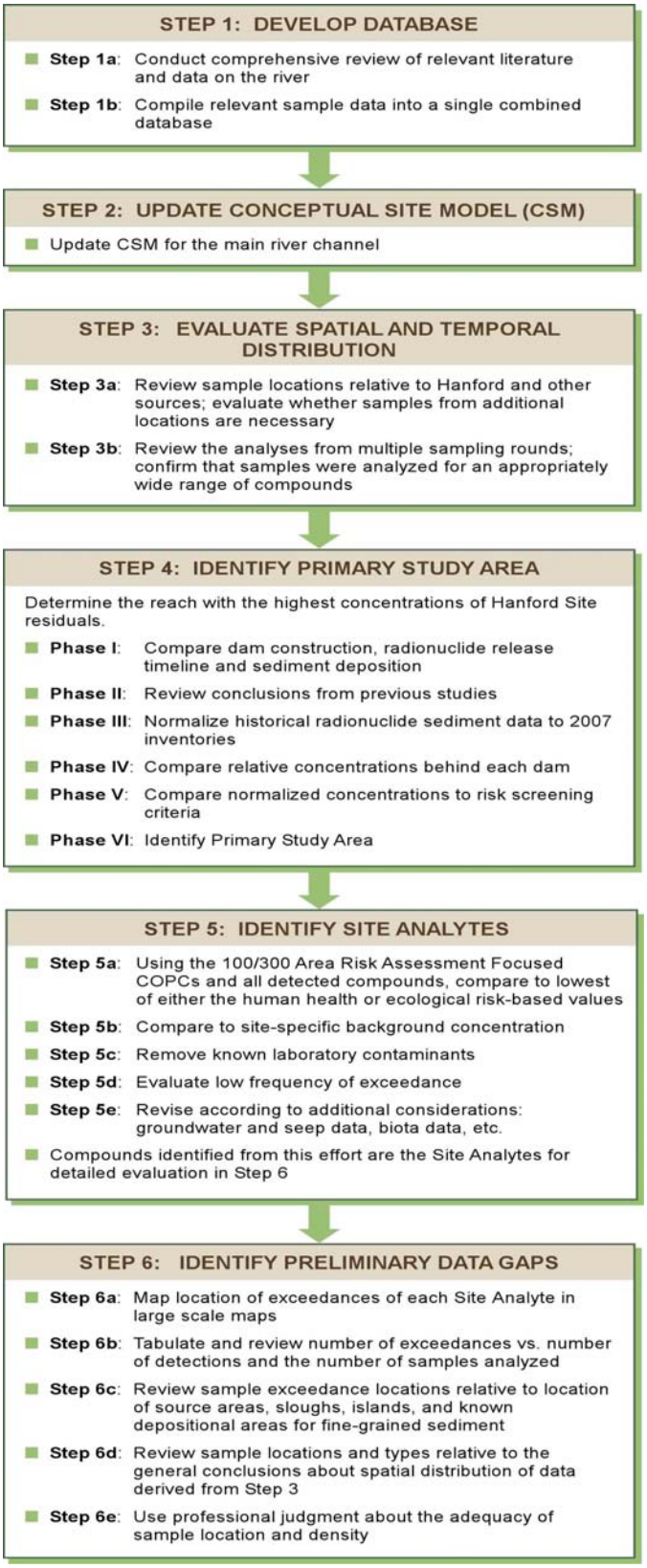


Table 2-1. Data Gap Analysis Crosswalk Reference.

Evaluation Step	Methodology	Results
Step 1: Database Development	Section 2.1	N/A
Step 2: Update Conceptual Site Model	Section 2.2	Section 3
Step 3: Evaluate Spatial and Temporal Distribution	Section 2.3	Section 4.1
Step 4: Identify Primary Study Area	Section 2.4	Section 4.2
Step 5: Identify Site Analytes	Section 2.5	Section 5.1
Step 6: Identify Preliminary Data Gaps	Section 2.6	Section 5.2

N/A = not applicable

Table 2-2. Combined Database Source Summary Table. (18 Pages)

Database	Date Acquired	Source Title	Medium	River Sections	Sampling Date (start)	Sampling Date (end)
CRC Database	2/9/2007	100 Area Columbia River Sediment Sampling	SD	1,2	11/12/1992	11/24/1992
CRC Database	2/9/2007	100 Area River Effluent Pipelines Risk Assessment	SD	Not Assigned		
CRC Database	2/9/2007	100 Areas CERCLA Ecological Investigations	BI	1,2	7/9/1991	10/29/1992
GiSdT Data (Updated)	6/11/2007	100/300 Areas RCBRA	BI, GW, PW, SD, SO, SW	1,2	10/13/2005	8/29/2006
CRC Database	2/9/2007	100-B/C Pilot Project Data Summary for 2003 and 2004	BI, SO SW	1,2	8/25/2003	12/12/2005
CRC Database	2/9/2007	100-NR-2 Study Area Ecological Risk Assessment Sampling And Analysis Plan	BI, SW	1,2	3/25/2004	9/25/2004
CRC Database	2/9/2007	1984 Annual Report Radiological Environmental Monitoring Program Nuclear Plant 2	BI, SD	2	10/3/1984	11/13/1984
CRC Database	2/9/2007	1985 Annual Report Radiological Environmental Monitoring Program Nuclear Plant 2	BI, SD	2	4/16/1985	10/10/1985
CRC Database	2/9/2007	1986 Radiological Environmental Monitoring Program Annual Report - Plant 2	BI, SD	2	1/21/1986	10/21/1986
CRC Database	2/9/2007	1999 Hanford Environmental Oversight Program Data Summary Report	AT, BI, GW, SD, SW	1,2	1/5/1999	12/16/1999
CRC Database	2/9/2007	2003-2004 Aquifer Tube Project Data	GW	2	11/2/2004	11/11/2004
CRC Database	2/9/2007	243,244Cm in Columbia River Sediments	SD	2	8/1/1977	8/1/1977
CRC Database	2/9/2007	A Survey for Elevated Levels of Uranium North of the 300 Area on the Hanford Site	SO	2	7/1/1989	7/1/1989

Table 2-2. Combined Database Source Summary Table. (18 Pages)

Database	Date Acquired	Source Title	Medium	River Sections	Sampling Date (start)	Sampling Date (end)
CRC Database	2/9/2007	A Total Maximum Daily Load Evaluation for Chlorinated Pesticides and PCBs in the Walla Walla River	BI, SW	2	5/30/2002	6/9/2003
CRC Database	2/9/2007	An Evaluation of Water Quality and Limnology for the Priest Rapids Project Area	SD, SW	1	3/27/1999	12/5/1999
CRC Database	2/9/2007	An Investigation of the Origin of 152 Eu in Columbia River Sediment	SD	1,2	7/28/1999	8/16/1999
CRC Database	2/9/2007	Aquatic Studies at the 100-HR-3 and 100-NR-1 Operable Units	BI	1,2	7/30/1991	1/31/1992
CRC Database	2/9/2007	Aquifer Sampling Tube Results for Fiscal Year 2003	GW	2	11/20/2002	1/16/2003
CRC Database	2/9/2007	Aquifer Sampling Tubes Data Summary, Fall 2000	GW	2	10/30/2000	11/17/2000
CRC Database	2/9/2007	Aquifer Sampling Tubes Data Summary, Fall 2001	GW	2	10/26/1999	11/8/2001
CRC Database	2/9/2007	Association of Hanford Origin Radionuclides with Columbia River Sediment	SD	1,2,3	8/3/1976	9/9/1976
CRC Database	2/9/2007	Bachelor Slough Ecosystem Restoration Sediment Quality Evaluation Report	SD	3	6/3/2003	6/3/2003
CRC Database	2/9/2007	Basic Water Monitoring Program Fish Tissue and Sediment Sampling for 1984	BI, SD	1,2	9/16/1980	9/12/1984
CRC Database	2/9/2007	Biological Uptake of 300-FF-5 Operable Unit Contaminants	BI	2	9/3/1991	9/30/1992

Table 2-2. Combined Database Source Summary Table. (18 Pages)

Database	Date Acquired	Source Title	Medium	River Sections	Sampling Date (start)	Sampling Date (end)
CRC Database	2/9/2007	Biomonitoring of Environmental Status and Trends (BEST) Program: Environmental Contaminants and their Effects on Fish in the Columbia River Basin	BI	1,2	9/1/1997	9/1/1997
CRC Database	2/9/2007	Bonneville Forebay & Upstream Locations Sediment Quality Evaluation September 18, 2002 Sampling Event	SD	3	9/18/2002	9/18/2002
CRC Database	2/9/2007	Bonneville Second Powerhouse Forebay Sediment Evaluation	SD	3	7/24/1997	7/28/1997
CRC Database	2/9/2007	Citizens Monitoring and Technical Assessment - Analysis of Chemical Contaminants in Hanford Reach Biota and Environmental Materials at the Perimeter of the Hanford Nuclear Reservation and on the Columbia River	BI, SD, SO, SW	1,2	10/7/2003	8/4/2004
CRC Database	2/9/2007	City of Richland Drinking Water data	SW	2	1/15/2004	1/15/2004
CRC Database	2/9/2007	City of Richland Waste Water Treatment Plant Effluent data - 2002 to 2005	EF	2	2/8/2005	2/8/2005
CRC Database	2/9/2007	Class II Inspection of the Boise Cascade Pulp & Paper Mill, Wallula, Washington-April 1992	SD	2	4/13/1992	4/14/1992
CRC Database	2/9/2007	Columbia and Willamette River Sediment Quality Evaluation for the Columbia River Channel Deepening Feasibility Report	SD	3	6/3/1997	7/24/1997
CRC Database	2/9/2007	Columbia Basin Crop and Water Quality Monitoring Study	SW	2	4/17/2000	10/6/2003

Table 2-2. Combined Database Source Summary Table. (18 Pages)

Database	Date Acquired	Source Title	Medium	River Sections	Sampling Date (start)	Sampling Date (end)
CRC Database	2/9/2007	Columbia Generating Station 2000 Annual Radiological Environmental Operating Report	EF, SW	2	1/4/2000	11/1/2000
CRC Database	2/9/2007	Columbia Generating Station 2001 Annual Radiological Environmental Operating Report	BI, EF, SD, SW	2	1/3/2001	11/6/2001
CRC Database	2/9/2007	Columbia Generating Station 2002 Annual Radiological Environmental Operating Report	BI, EF, SD, SW	2	1/2/2002	11/21/2002
CRC Database	2/9/2007	Columbia Generating Station 2003 Annual Radiological Environmental Operating Report	BI, EF, SD, SW	2	1/2/2003	11/4/2003
CRC Database	2/9/2007	Columbia Generating Station 2004 Annual Radiological Environmental Operating Report	BI, EF, SD, SW	1,2	1/6/2004	3/10/2005
CRC Database	2/9/2007	Columbia River Basin Fish Contaminant Survey 1996-1998	BI	1,2	6/20/1996	4/24/1998
CRC Database	2/9/2007	Columbia River Biomarker Study	BI	Not Assigned	3/20/1996	6/6/1998
CRC Database	2/9/2007	Columbia River Channel Deepening (CRCD) Station #76 (CR-BC-76) Sediment Quality Evaluation	SD	3	6/1/1997	6/1/1997
CRC Database	2/9/2007	Columbia River Mile 29-34 Brookfield Mound and Skamakawa Turn Sediment Evaluation	SD	3	8/9/2000	9/7/2000
CRC Database	2/9/2007	Concentrations and Annual Fluxes for Selected Water Quality Constituents from the USGS National Stream Quality Accounting Network (NASQAN) 1996-02 (electronic resource)	SW	3	1/5/1999	2/9/2002

Table 2-2. Combined Database Source Summary Table. (18 Pages)

Database	Date Acquired	Source Title	Medium	River Sections	Sampling Date (start)	Sampling Date (end)
CRC Database	2/9/2007	Concentrations and Loads of Suspended Sediment and Nutrients in Surface Water of the Yakima River Basin, Washington, 1999-2000- With an Analysis of Trends of Concentrations	SW	2	1/13/1999	6/7/2005
CRC Database	2/9/2007	Concentrations Of 303(d) Listed Pesticides, PCBs, And PAHs Measured With Passive Samplers Deployed In The Lower Columbia River	SW	3	9/1/2003	6/1/2004
CRC Database	2/9/2007	Crims Island Ecosystem Restoration Sediment Quality Evaluation Report	SD	3	7/15/2003	7/15/2003
CRC Database	2/9/2007	EIM Database - Columbia River above Bonneville Dam	SW	3	8/27/2003	6/22/2004
CRC Database	2/9/2007	EIM Database - Columbia River above Kalama - location #1	SW	3	8/28/2003	1/13/2004
CRC Database	2/9/2007	EIM Database - Columbia River above Kalama - location #2	SW	3	5/25/2004	6/23/2004
CRC Database	2/9/2007	EIM Database - Columbia River above Willamette Influent	SW	3	6/25/2003	6/22/2004
CRC Database	2/9/2007	EIM Database - Columbia River at Columbia City	BI	Not Assigned	3/1/2000	3/1/2000
CRC Database	2/9/2007	EIM Database - Columbia River at Vancouver	SW	3	10/30/2002	9/24/2003
CRC Database	2/9/2007	EIM Database - Columbia River at Vernita	SW	1	1/13/1999	6/6/2005
CRC Database	2/9/2007	EIM Database - Columbia River below Bonneville Dam - location #2	SW	3	8/27/2003	6/22/2004
CRC Database	2/9/2007	EIM Database - Columbia River below Longview	SW	3	5/25/2004	6/23/2004

Table 2-2. Combined Database Source Summary Table. (18 Pages)

Database	Date Acquired	Source Title	Medium	River Sections	Sampling Date (start)	Sampling Date (end)
CRC Database	2/9/2007	EIM Database - Columbia River below Longview (Location 2)	SW	3	8/28/2003	1/13/2004
CRC Database	2/9/2007	EIM Database - Columbia Slough	SW	3	8/27/2003	6/22/2004
CRC Database	2/9/2007	Energy Northwest Nuclear Plant 2 1999 Annual Radiological Environmental Operating Report	BI, SD	2	8/24/1999	10/19/1999
CRC Database	2/9/2007	Environmental Contaminants in Aquatic Resources from the Columbia River	BI, SD	3	9/1/1990	11/1/1991
CRC Database	2/9/2007	Environmental Monitoring at Hanford for 1984	BI, SO	1,2	5/16/1984	12/12/1984
CRC Database	2/9/2007	Environmental Monitoring at Hanford for 1985	BI, SO	1,2	8/5/1980	11/15/1985
CRC Database	2/9/2007	Environmental Monitoring at Hanford for 1986	BI, SO	1,2	4/29/1986	12/5/1986
CRC Database	2/9/2007	Environmental Monitoring at Hanford for 1987	BI, SO	1,2	4/29/1987	10/30/1987
CRC Database	2/9/2007	Environmental Monitoring of Columbia River Sediments: Grain-Size Distribution and Contaminant Association	SD	1,2	4/11/1994	4/15/1994
CRC Database	2/9/2007	Environmental Radiation Oversight Program - Database	BI, SD, SW	1,2,3	2/9/1995	5/5/2005
CRC Database	2/9/2007	Environmental Radiation Program 1992-1994 Annual Report	BI, SD, SO	1,2,3	3/11/1992	10/15/1994
CRC Database	2/9/2007	Environmental Radiation Program 24th Annual Report January 1985 - December 1985	BI, SD	2	4/16/1985	9/20/1985
CRC Database	2/9/2007	Environmental Radiation Program 25th Annual Report January 1986 - December 1986	BI, SD	2	4/16/1986	9/30/1986

Table 2-2. Combined Database Source Summary Table. (18 Pages)

Database	Date Acquired	Source Title	Medium	River Sections	Sampling Date (start)	Sampling Date (end)
CRC Database	2/9/2007	Environmental Radiation Program 26th Annual Report January 1987 - December 1987	BI, SD	2	4/9/1987	9/14/1987
CRC Database	2/9/2007	Environmental Radiation Program 27th Annual Report January through December 1988	BI, SD	2	4/21/1988	9/27/1988
CRC Database	2/9/2007	Environmental Radiation Program 28th Annual Report January through December 1989	BI, SD	2	4/11/1989	10/17/1989
CRC Database	2/9/2007	Environmental Radiation Program 29th Annual Report January through December 1990	BI, SD	2	4/19/1990	9/24/1990
CRC Database	2/9/2007	Environmental Surveillance at Hanford for CY 1971	BI, SO	1,2	1/4/1971	12/30/1971
CRC Database	2/9/2007	Environmental Surveillance at Hanford for CY 1972	BI, SO	1,2	1/3/1972	10/25/1973
CRC Database	2/9/2007	Environmental Surveillance at Hanford for CY 1973	BI, SO	1,2	1/8/1973	12/20/1973
CRC Database	2/9/2007	Environmental Surveillance at Hanford for CY 1974	BI, SO	1,2	1/3/1974	8/19/1975
CRC Database	2/9/2007	Environmental Surveillance at Hanford for CY 1975	BI	2	1/6/1975	12/19/1975
CRC Database	2/9/2007	Environmental Surveillance at Hanford for CY 1976	BI, SO	2	1/6/1976	12/28/1976
CRC Database	2/9/2007	Environmental Surveillance at Hanford for CY 1977	BI, SO	2	1/25/1977	12/30/1977
CRC Database	2/9/2007	Environmental Surveillance at Hanford for CY 1978	BI, SO	1,2	2/9/1978	12/15/1978
CRC Database	2/9/2007	Environmental Surveillance at Hanford for CY 1979	BI, SO	2	1/19/1979	12/6/1979
CRC Database	2/9/2007	Environmental Surveillance at Hanford for CY 1980	BI, SO	2	1/21/1980	12/17/1980

Table 2-2. Combined Database Source Summary Table. (18 Pages)

Database	Date Acquired	Source Title	Medium	River Sections	Sampling Date (start)	Sampling Date (end)
CRC Database	2/9/2007	Environmental Surveillance at Hanford for CY 1982	BI, SO	1,2	1/8/1982	12/17/1982
CRC Database	2/9/2007	Environmental Surveillance at Hanford for CY 1983	BI, SO	1,2	2/17/1983	12/2/1983
CRC Database	2/9/2007	Environmental Surveillance at Hanford for CY-1981	BI, SO	1,2	1/9/1981	12/16/1981
CRC Database	2/9/2007	Environmental Surveillance Report on Oregon Surface Waters 1961- 1993, Vol. 2	SD	2,3	1/19/1963	11/3/1993
CRC Database	2/9/2007	Evaluation of Radiological Conditions in the Vicinity of Hanford for 1960	BI	Not Assigned	1/27/1960	10/12/1960
CRC Database	2/9/2007	Evaluation of Radiological Conditions in the Vicinity of Hanford for 1962	BI	1	1/12/1962	12/11/1962
CRC Database	2/9/2007	Groundwater Monitoring Program	GW	2	10/11/2004	1/18/2005
CRC Database	2/9/2007	Hanford Environmental Oversight Program 1991 Data Summary Report	BI, SD	2	4/10/1991	11/27/1991
CRC Database	2/9/2007	Hanford Environmental Oversight Program 2000 Data Summary Report	BI, SD, SW	1,2	1/4/2000	12/5/2000
CRC Database	2/9/2007	Hanford Environmental Oversight Program 2001 Data Summary Report	BI, SD, SW	1,2	1/3/2001	12/4/2001
CRC Database	2/9/2007	Hanford Environmental Oversight Program 2002 Data Summary Report	BI, SD, SW	1,2	1/2/2002	12/3/2002
CRC Database	2/9/2007	Hanford Environmental Oversight Program 2003 Data Summary Report	BI, SD, SW	1,2,3	1/2/2003	12/8/2003

Table 2-2. Combined Database Source Summary Table. (18 Pages)

Database	Date Acquired	Source Title	Medium	River Sections	Sampling Date (start)	Sampling Date (end)
CRC Database	2/9/2007	Hanford Site Environmental Report for Calendar Year 1988	BI, SD, SO	1,2	4/1/1988	11/16/1988
CRC Database	2/9/2007	Hanford Site Environmental Report for Calendar Year 1989	BI, SD, SO	1,2	4/25/1989	12/29/1989
CRC Database	2/9/2007	Hanford Site Environmental Report for Calendar Year 1990	BI, SD, SO	1,2	1/30/1990	11/30/1990
CRC Database	2/9/2007	Hanford Site Environmental Report for Calendar Year 1991	BI, SD, SO	1,2	1/18/1991	12/20/1991
CRC Database	2/9/2007	Hanford Site Environmental Report for Calendar Year 1992	BI, SD, SO	1,2	5/20/1992	12/17/1992
CRC Database	2/9/2007	Hanford Site Environmental Report for Calendar Year 1993	BI, SD, SO	1,2	6/3/1993	10/21/1993
CRC Database	2/9/2007	Hanford Site Environmental Report for Calendar Year 1994	BI, SD, SO	1,2	5/13/1994	12/22/1994
CRC Database	2/9/2007	Hanford Site Environmental Report for Calendar Year 1995	BI, SD	1,2	5/18/1993	12/31/1995
CRC Database	2/9/2007	Hanford Site Environmental Report for Calendar Year 1996	BI, SD	1,2	1/1/1996	8/10/1998
CRC Database	2/9/2007	Hanford Site Environmental Report for Calendar Year 1997	BI, SD	1,2	5/23/1995	10/12/1999
CRC Database	2/9/2007	Hanford Site Environmental Report for Calendar Year 1998	BI, SD, SO	2	6/12/1998	12/11/1998
CRC Database	2/9/2007	Hanford Site Environmental Report for Calendar Year 1999	BI, SD, SW	1,2	1/27/1999	12/29/1999
CRC Database	2/9/2007	Hanford Site Environmental Report for Calendar Year 2000	BI, SD, SO, SW	1,2	1/26/2000	12/28/2000

Table 2-2. Combined Database Source Summary Table. (18 Pages)

Database	Date Acquired	Source Title	Medium	River Sections	Sampling Date (start)	Sampling Date (end)
CRC Database	2/9/2007	Hanford Site Environmental Report for Calendar Year 2001	BI, SD, SO, SW	1,2	1/4/2001	10/31/2002
CRC Database	2/9/2007	Hanford Site Environmental Report for Calendar Year 2002	BI, SD, SW	1,2	9/21/2001	12/26/2002
CRC Database	2/9/2007	Hanford Site Environmental Report for Calendar Year 2003	AT, BI, SD, SO, SW	1,2,3	1/8/2003	1/8/2004
CRC Database	2/9/2007	Hanford Site Environmental Report for Calendar Year 2004	BI, SD, SW	1,2,3	1/9/2004	1/5/2005
CRC Database	6/27/2007	Hanford Site Environmental Report for Calendar Year 2005	BI, SD, SW	1,2	1/13/2005	1/4/2006
CRC Database	2/9/2007	Hanford Site Groundwater Monitoring for Fiscal Year 1999	GW	2	1/21/1999	9/20/1999
CRC Database	2/9/2007	Hanford Site Groundwater Monitoring for Fiscal Year 2000	GW	2	12/7/1999	5/15/2000
CRC Database	2/9/2007	Hanford Site Groundwater Monitoring for Fiscal Year 2001	GW	2	10/19/2000	8/21/2001
CRC Database	2/9/2007	Hanford Site Groundwater Monitoring for Fiscal Year 2002	GW	2	10/10/2001	9/27/2002
CRC Database	2/9/2007	Hanford Site Groundwater Monitoring for Fiscal Year 2003	GW	2	10/17/2002	7/17/2003
CRC Database	2/9/2007	Hanford Site Groundwater Monitoring for Fiscal Year 2004	GW	2	10/13/2003	7/27/2004
CRC Database	2/9/2007	Heavy Metal Transport and Behavior in the Lower Columbia River, USA	SD	1,2	8/1/1999	8/1/1999

Table 2-2. Combined Database Source Summary Table. (18 Pages)

Database	Date Acquired	Source Title	Medium	River Sections	Sampling Date (start)	Sampling Date (end)
CRC Database	2/9/2007	Historical Changes in the Columbia River Estuary based on Sediment Cores: Feasibility Studies	SD	3	11/01/1852	10/1/2001
CRC Database	2/9/2007	Hydrogeology of the Unconsolidated Sediments, Water Quality, and Ground-Water/Surface-Water Exchanges in the Methow River Basin, Okanogan County, Washington	SW	1	9/21/2001	9/21/2001
CRC Database	2/9/2007	Investigation into the Recurring Toxicity of the Chinet Company Columbia River Intake	SW	1	3/6/2001	6/20/2001
CRC Database	2/9/2007	Investigation of the Distribution of Organochlorine and Polycyclic Aromatic Hydrocarbon Compounds in the Lower Columbia River Using Semipermeable Membrane Devices	SD	3	9/8/1997	11/20/1997
CRC Database	2/9/2007	Irrigon Boat Basin Sediment Evaluation	SD	3	6/4/1993	6/4/1993
CRC Database	2/9/2007	K Basin Fisheries Investigations: FY 94 Summary of Activities	BI	1,2	5/24/1993	5/24/1993
CRC Database	2/9/2007	Kalama Turning Basin (Columbia River Mile 73.9-74.8) Sediment Quality Evaluation Report December 2003	SD	3	9/10/2003	9/10/2003
CRC Database	2/9/2007	Lower Columbia River Backwater Reconnaissance Survey	SD	3	6/24/1993	7/1/1993
CRC Database	2/9/2007	Mercury in Edible Fish Tissue and Sediments from Selected Lakes and Rivers of Washington State	BI, SD, SW	2	9/27/2002	10/28/2002
Mid Columbia Data	6/8/2007	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	SD	1,2	6/1/2004	6/1/2004

Table 2-2. Combined Database Source Summary Table. (18 Pages)

Database	Date Acquired	Source Title	Medium	River Sections	Sampling Date (start)	Sampling Date (end)
CRC Database	2/9/2007	Mid-Columbia River Feasibility Study: Physical And Chemical Analyses Of Hanford Reach Sediments	SD	1,2	8/1/1986	10/1/1986
CRC Database	2/9/2007	Monitoring Tissue Concentrations of Chromium and Fish Condition in Juvenile Fall Chinook Salmon from the Hanford Reach of the Columbia River	BI, SW	1,2	5/1/2002	8/27/2002
CRC Database	2/9/2007	Nickel-63 in Columbia River Sediments below the Hanford Reservation	SD	2	8/1/1977	8/1/1977
CRC Database	2/9/2007	Occurrence and Significance of DDT Compounds and Other Contaminants in Fish, Water, and Sediment from the Yakima River Basin	BI, SD	2	5/20/1985	9/24/1985
CRC Database	2/9/2007	Old Mouth Of The Cowlitz River Federal Project Sediment Quality Evaluation Report	SD	3	9/10/2003	9/10/2003
CRC Database	2/9/2007	Oregon Department of Environmental Quality *a	BI, SD	2	9/1/1991	10/23/1991
CRC Database	2/9/2007	Oregon Department of Environmental Quality *b	BI, SD	2	9/1/1991	10/23/1991
CRC Database	2/9/2007	Oregon Department of Environmental Quality *c	BI, SD	2	9/10/1991	10/23/1991
CRC Database	2/9/2007	Oregon Slough Entrance Channel Sediment Quality Evaluation	SD	3	6/19/2001	6/19/2001
CRC Database	2/9/2007	Pesticides Detected in the Walla Walla Drainage, April and June 1996	SD	2	6/18/1996	6/18/1996
CRC Database	2/9/2007	Pesticides/PCBs Analysis of McNary Pool Fish	BI	2	8/3/1987	8/3/1987

Table 2-2. Combined Database Source Summary Table. (18 Pages)

Database	Date Acquired	Source Title	Medium	River Sections	Sampling Date (start)	Sampling Date (end)
CRC Database	2/9/2007	Port of Morrow Messner Cove Sediment Sampling Evaluation	SD	3	3/17/1999	3/17/1999
CRC Database	2/9/2007	Preoperational Environmental Radiological Monitoring Program WNP-2 March 1978 Through January 19, 1984	BI, SD	2	4/26/1978	11/16/1983
CRC Database	2/9/2007	Public Safety and Resource Protection Project (D5005/48301)	BI, SO	1,2	6/3/2004	5/5/2005
CRC Database	2/9/2007	Radiological Survey of Shoreline Vegetation from the Hanford Reach of the Columbia River, 1990-1992	BI	1,2	1/1/1992	1/1/1992
CRC Database	2/9/2007	Radionuclide Concentrations in White Sturgeon from the Columbia River	BI	2	4/27/1986	10/18/1990
CRC Database	2/9/2007	Reconnaissance Investigation of Water Quality, Bottom Sediment, and Biota Associated with Irrigation Drainage in the Columbia Basin Project, Washington, 1991-92	SD	2	7/16/1992	7/16/1992
CRC Database	2/9/2007	Reynolds Metal Company Class II Inspection February 1990	SD	3	2/23/1990	2/23/1990
CRC Database	2/9/2007	Sampling and Analysis of 100 Area Springs	SO	2	9/17/1991	10/18/1991
CRC Database	2/9/2007	Screening Survey for Chemical Contaminants and Toxicity in Sediments at Five Lower Columbia River Ports September 22-24, 1987	SD	3	7/22/1987	7/24/1987

Table 2-2. Combined Database Source Summary Table. (18 Pages)

Database	Date Acquired	Source Title	Medium	River Sections	Sampling Date (start)	Sampling Date (end)
CRC Database	2/9/2007	Screening Survey for Contaminants in Ground Water and Surface Drainage at the Port of Pasco	BI, SD	2	9/10/1985	9/30/1986
CRC Database	2/9/2007	Screening Survey of Mercury Levels in Fish Tissue	SD, SW	2	9/27/2002	9/27/2002
CRC Database	2/9/2007	Sediment Quality Evaluation - 2005 Data from Oregon Slough	SD	2	2/17/2005	2/17/2005
CRC Database	2/9/2007	Sediment Quality Evaluation Lower Columbia and Willamette Rivers May 1990	SD	2	5/3/1990	5/10/1990
CRC Database	2/9/2007	Simultaneously Extracted Metals/Acid-Volatile Sulfide and Total Metals in Surface Sediment from the Hanford Reach of the Columbia River and the Lower Snake River	SO	1,2	8/15/1997	9/3/1999
CRC Database	2/9/2007	Skipanon Channel & Boat Basin Sediment Evaluation Report	SD	3	6/24/2003	6/24/2003
CRC Database	2/9/2007	Skipanon Entrance Channel and Boat Basin Sediment Quality Evaluation	SD	3	9/12/2001	9/12/2001
CRC Database	2/9/2007	Snake and Columbia Rivers Sediment Sampling Project	SD	2	8/19/1991	8/20/1991
CRC Database	2/9/2007	St. Helens, Oregon Cross Channel, Sediment Quality Evaluation Report	SD	3	5/4/1989	5/4/1989
CRC Database	2/9/2007	Statewide Arsenic Sampling in Selected Rivers	SW	2,3	7/9/2001	6/12/2002
CRC Database	2/9/2007	Statewide Metals in Selected Rivers & Creeks	SW	2	7/25/2001	5/16/2002

Table 2-2. Combined Database Source Summary Table. (18 Pages)

Database	Date Acquired	Source Title	Medium	River Sections	Sampling Date (start)	Sampling Date (end)
CRC Database	2/9/2007	Surface Water Quality Assessment of the Yakima River Basin, Washington: Pesticide and Other Trace-Organic-Compound Data for Water, Sediment, Soil, and Aquatic Biota, 1987-91	BI, SD	2	8/31/1988	11/10/1990
CRC Database	2/9/2007	Surface-Water Quality Assessment of the Yakima River Basin in Washington: Major and Minor Element Data for Sediment, Water and Aquatic Biota, 1987-91	BI, SD	2	8/25/1987	11/10/1990
CRC Database	2/9/2007	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	SD, SW	1,2,3	7/14/2003	8/8/2003
CRC Database	2/9/2007	Survey of Radiological and Chemical Contaminants in the Near-Shore Environment at the Hanford Site 300 Area	AT, BI, SO, SW	1,2	8/26/2001	11/14/2001
CRC Database	2/9/2007	Survey of Radiological Contaminants in the Near-Shore Environment at the Hanford Site 100-N Reactor Area	BI, SO	1,2	9/8/1997	9/11/1997
CRC Database	2/9/2007	The City of the Dalles Quarterly Testing Data	SW	3	2/8/2000	5/10/2005
CRC Database	2/9/2007	The vertical distribution of selected trace metals and organic compounds in bottom materials in the proposed lower Columbia River export channel, Oregon.	SD	3	9/25/1984	10/1/1984
CRC Database	2/9/2007	TMDL Technical Assessment of DDT and PCBs in the Okanogan River	BI, SD	1	8/21/2001	11/6/2001

Table 2-2. Combined Database Source Summary Table. (18 Pages)

Database	Date Acquired	Source Title	Medium	River Sections	Sampling Date (start)	Sampling Date (end)
CRC Database	2/9/2007	Trends in Radionuclide Concentrations in Hanford Reach Fish, 1982 through 1992	BI	1,2	11/11/1988	11/11/1988
CRC Database	2/9/2007	Trouble in the Columbia Riverbed: increasing radioactivity under the Hanford Reach	SW	2	6/1/2001	6/1/2001
CRC Database	2/9/2007	Upper Deschutes Basin Spring Water Quality Survey 2002	SW	3	2/22/1999	6/13/2005
USACE Data	3/28/2007	USACE	SD	2	9/15/1998	9/21/1998
CRC Database	2/9/2007	USBR Columbia River Pump Exchange Project, Potential Water Quality Impacts on the Lower Yakima River	SW	2	3/21/1995	7/26/2000
CRC Database	2/9/2007	VANALCO Aluminum (former ALCOA Aluminum Plant) Sediment Quality Evaluation	SD	3	6/20/2001	6/20/2001
CRC Database	2/9/2007	Walla Walla River Chlorinated Pesticide and PCB TMDL	SW	2	5/14/2002	6/9/2003
CRC Database	2/9/2007	Washington Public Power Supply System Nuclear Plant 2 1993 Annual Report	BI, SD	2	4/15/1993	10/6/1993
CRC Database	2/9/2007	Washington Public Power Supply System Nuclear Plant 2 1994 Annual Radiological Environmental Operating Report	BI, SD	2	4/7/1994	10/5/1994
CRC Database	2/9/2007	Washington Public Power Supply System Nuclear Plant 2 1995 Annual Radiological Environmental Operating Report	BI, SD	2	4/6/1995	10/25/1995
CRC Database	2/9/2007	Washington Public Power Supply System Nuclear Plant 2 1996 Annual Radiological Environmental Operating Report	BI, SD	2	10/1/1996	10/30/1996

Table 2-2. Combined Database Source Summary Table. (18 Pages)

Database	Date Acquired	Source Title	Medium	River Sections	Sampling Date (start)	Sampling Date (end)
CRC Database	2/9/2007	Washington Public Power Supply System Nuclear Plant 2 1997 Annual Radiological Environmental Operating Report	BI, SD	2	9/24/1997	10/29/1997
CRC Database	2/9/2007	Washington Public Power Supply System Nuclear Plant 2 1998 Annual Radiological Environmental Operating Report	BI, SD	2	4/8/1998	10/21/1998
CRC Database	2/9/2007	Washington Public Power Supply System Nuclear Plant Number 2 Radiological Environmental Monitoring Program 1987 Annual Report	BI, SD	2	4/9/1987	10/14/1987
CRC Database	2/9/2007	Washington Public Power Supply System Nuclear Plant Number 2 Radiological Environmental Monitoring Program 1988 Annual Report	BI, SD	2	4/21/1988	10/26/1988
CRC Database	2/9/2007	Washington Public Power Supply System Nuclear Plant Number 2 Radiological Environmental Monitoring Program 1989 Annual Report	BI, SD	2	4/11/1989	10/19/1989
CRC Database	2/9/2007	Washington Public Power Supply System Nuclear Plant Number 2 Radiological Environmental Monitoring Program 1990 Annual Report	BI, SD	2	4/19/1990	10/16/1990
CRC Database	2/9/2007	Washington Public Power Supply System Nuclear Plant Number 2 Radiological Environmental Monitoring Program 1991 Annual Report	BI, SD	2	4/10/1991	10/3/1991
CRC Database	2/9/2007	Washington Public Power Supply System Nuclear Plant Number 2 Radiological Environmental Monitoring Program 1992 Annual Report	BI, SD	2	4/9/1992	10/20/1992

Table 2-2. Combined Database Source Summary Table. (18 Pages)

Database	Date Acquired	Source Title	Medium	River Sections	Sampling Date (start)	Sampling Date (end)
CRC Database	2/9/2007	Washington State Pesticide Monitoring Program Pesticides and PCBs in Marine Mussels, 1995	BI	Not Assigned	4/24/1987	4/24/1987
CRC Database	2/9/2007	Washington State Pesticide Monitoring Program Reconnaissance Sampling of Fish Tissue and Sediments (1992)	BI, SD	2	9/16/1992	9/16/1992
CRC Database	2/9/2007	Washington State Pesticide Monitoring Program: 1993 Fish Tissue Sampling Report	BI	2	9/13/1993	9/14/1993
CRC Database	2/9/2007	WSPMP 1994 Pesticides in Fish Tissue	BI	2	9/14/1994	9/14/1994
CRC Database	2/9/2007	WSPMP 1994 Pesticides in Sediment	SD	2	9/14/1994	9/14/1994
CRC Database	2/9/2007	Yakima Mainstem Monitoring and BMP Implementation Project	SW	2	4/29/2003	11/3/2004

AT = aquifer tube
BI = biota
CRC = Columbia River Component
GiSdt = Guided Interactive Statistics Decision Tools
GW = groundwater
PW = pore water
SD = sediment
SO = soil
SW = surface water

Table 2-3. Summary of Data Sources and Assigned Data Quality Category.

Source	Category[a]
Original CRC Database	QA1/QA2/QA3/QA4
CRC Database - Hanford Site Environmental Report for Calendar Year 2004 (PNNL)[b][c]	QA1
CRC Database - Hanford Site Environmental Report for Calendar Year 2005 (PNNL)[b][d]	QA1
Data from 100/300 Area risk assessment[e]	QA1
USACE Data (1998)	QA2
Inter-Areas sample location data[f]	QA1
Mid-Columbia Sediment Data (data not yet published)[g]	QA2

Notes:
[a] Categories as defined in the *Existing Source Information Summary Report Compilation/Evaluation Effort: December 2004 to September 2005* (WCH-64)
[b] PNNL data are from the Surface Environmental Surveillance Project and was not previously included in the original CRC database due to the timing of the issuance of that document.
[c] PNNL-15222, *Hanford Site Environmental Report for Calendar Year 2004*.
[d] PNNL-15892, *Hanford Site Environmental Report for Calendar Year 2005*.
[e] Data downloaded from the data management website (http://rcbra100-300.neptuneinc.org/rcbra100-300/home/index.xml) on June 11, 2007.
[f] Data collected by WCH in 2006/2007; however, results have not been published and the QA assessment was not complete at the time of this report.
[g] Data collected by the EPA in 2004; however, results have not been published. Data provided to WCH by EPA Region 10, Watershed Restoration Unit, on June 8, 2007.

CRC = Columbia River Component
EPA = U.S. Environmental Protection Agency
QA = quality assurance
PNNL = Pacific Northwest National Laboratory
USACE = U.S. Army Corps of Engineers
WCH = Washington Closure Hanford

3.0 SITE SETTING AND CONCEPTUAL SITE MODEL

This section describes the natural setting of the Columbia River and the Hanford Site, identifies the potential sources of contaminants to the river, and presents the CSM for contaminant transport and distribution throughout the Primary Study Area. Because this study uses risk-based criteria and will be followed by a screening-level risk assessment, an assessment of potential exposure pathways is included as part of the CSM.

Most of the text in this section concerning site setting, history, and contaminant sources was presented previously in WCH-91, and is excerpted below.

3.1 NATURAL SITE SETTING

The following subsections describe the natural site setting, including the Columbia River drainage system, the Hanford Site geology, and dynamics of the Columbia River.

3.1.1 Columbia River Drainage

The Columbia River originates in Canada on the west slope of British Columbia's Rocky Mountains and flows 1,954 km (1,214 mi) to the Pacific Ocean along the Washington/Oregon state boundary. Approximately 1,207 km (750 mi) of the river flow through the state of Washington. The Hanford Reach, part of River Section II, is an 82 km (51-mi) stretch of river that flows unimpeded from the base of Priest Rapids Dam downstream to the head of Lake Wallula above McNary Dam. It is the only free-flowing portion of the Columbia River in the United States above Bonneville Dam. The segment of the Columbia River below the confluence with the Yakima and Snake Rivers is characterized by high turbidity associated with extensive erosion in the eastern and western portions of the Columbia Plateau.

The Columbia River enters the Hanford Site from the west and flows along the northern portion and eastern site boundary. The Yakima River flows along the southern boundary of the Hanford Site and drains to the Columbia River several miles south of the site boundary. The confluence of the Snake River, the largest tributary to the Columbia River, is located downstream. The smaller Walla Walla River drains to the Columbia River downstream of the Snake River confluence. The Yakima and Snake Rivers are the primary contributors of suspended sediment to the Columbia River (FH 1999).

3.1.2 Site Geology

The Hanford Site is located in the Pasco Basin within the Yakima Fold Belt on the Columbia Plateau. The Hanford Site is underlain by basalt of the Columbia River Basalt Group and a sequence of suprabasalts. The Saddle Mountains Basalt Formation is the youngest formation in the Columbia River Basalt Group, and is the uppermost flood basalt on the Hanford Site and along the river. It is a dark to gray extrusive volcanic rock unit that forms the bedrock across the Hanford Site. The bedrock is overlain by deposits ranging in thickness from 50 m (165 ft) in the 300 Areas to more than 152 m (500 ft) in the 200 Areas (PNNL-14027). These deposits include the Ringold Formation, the Cold Creek Unit, the Hanford formation, and Holocene-aged deposits. These deposits are the source of naturally occurring minerals, including antimony, arsenic, potassium, potassium-40, and iron to surface water and sediment of the Columbia River.

The Ringold Formation is a late Miocene-age interstratified sequence of unconsolidated clay, silt, sand, and gravel-to-cobble gravel deposited by the ancestral Columbia River. The Cold Creek Unit is a Pliocene-age highly weathered surface that has only been documented in the vicinity of the 200 Areas. The Hanford formation consists of uncemented gravels, sands, and silts deposited by Pleistocene cataclysmic flood waters. The Holocene-aged deposits consist of very fine- to medium-grained sand to silty sand and are generally less than 3 m (10 ft) thick. They form a thin veneer across the Hanford Site, except in localized areas where they have been removed by human activity.

The surface elevation of the Hanford Site ranges from approximately 119 m (390 ft) along the Columbia River in the 300 Area to approximately 914 m (3,000 ft) at the top of Rattlesnake Hills near the southwest edge of the Hanford Site. In the 100 Area, the elevations range from 119 to 143 m (390 to 470 ft). Near the 200 Areas, elevations range between 198 to 229 m (650 and 750 ft) and decrease in elevation to the north, northwest, and east toward the Columbia River.

3.1.3 River Dynamics

With respect to discharge, the Columbia River and its 30 major tributaries are the predominant river system in the Pacific Northwest and the fourth largest in the United States. The Pend Oreille and Spokane Rivers provide the largest annual tributary contributions to flow (over 850 m^3/sec [30,000 ft^3/sec]) on the Columbia River in the upper reach between Canada and Grand Coulee Dam. The tributaries between the Okanogan River and the Snake River contribute approximately 396 m^3/sec (14,000 ft^3/sec), and the Snake River itself contributes approximately 1,529 m^3/sec (54,000 ft^3/sec). Below the Snake River, downstream to Bonneville Dam, the mean annual tributary inflow totals approximately 396 m^3/sec (14,000 ft^3/sec) (CRWMP 2006).

The flow of water in the Columbia River is regulated by several dams within the United States. The dams were constructed between 1938 and 1967. Priest Rapids Dam is the nearest dam upstream of the Hanford Site, and McNary Dam is the nearest downstream dam. The construction of the dams greatly slowed the water travel times and resulted in lower sediment loads being discharged to the Pacific Ocean.

Flows through the Hanford Reach fluctuate significantly and are controlled primarily by power demand operations at Priest Rapids Dam (FH 1999). The flow rate of the Columbia River at Priest Rapids averages approximately 3,398 m^3/sec (120,000 ft^3/sec) (PNNL-14027). The tributaries along the Hanford Reach have average flow rates of 1,553 m^3/sec (54,830 ft^3/sec) (Snake River), 99 m^3/sec (3,512 ft^3/sec) (Yakima River), and 16 m^3/sec (568 ft^3/sec) (Walla Walla River) (USGS 2006). As a result of the fluctuations in discharges at Priest Rapids Dam, the depth of the Columbia River varies significantly over time, and may change by up to 1 m (3 ft) within a few hours along the Hanford Reach (FH 1999).

A number of studies have been conducted to measure flow and dispersion (e.g., mixing of surface water and sediments) within the Hanford Reach of the Columbia River. Additional information may be obtained from the following references: *The Turbulent Diffusion of River Contaminants* (HW-49195); *Progress in Studies of Radionuclides in Columbia River Sediment; A Summary of Hanford Achievements in this Program under General Electric, 1963-1964* (HW-83614); *Evaluation of the Effect of Water Management on Fall Chinook Spawning and Rearing Habitat, and on Stranding and Entrapment of Juvenile Fall Chinook* (USFWS 2003); *River Data Package for Hanford Assessments* (PNNL-14824); and *Hydrodynamic Simulation of*

the Columbia River, Hanford Reach, 1940-2004 (PNNL-15226). These data have also been used to develop hydrodynamic models of this reach. The intent of these modeling efforts has been to provide a predictive tool that can be used to reconstruct historical river elevations or build scenarios of future river elevations for solving environmental problems such as groundwater–river interactions (e.g., mixing and mass transport) or fish habitat inventories (PNNL-15226). Based on these studies, the estimates and observations of longitudinal and transverse dispersion are provided. HW-49195 is specifically focused on the mixing that occurs within the river as cooling water is discharged via subsurface pipes.

The suspended load of the Columbia River is typically very low. The bedload consists mainly of fine and medium sand. The coarser sediments are typically deposited at the head of pools, while the finer sediments are deposited near or may be transported past the dams. Due to the flow rate along the Hanford Reach, the majority of this stretch of river is a nondepositional area. The sediment thickness on the upstream side of McNary Dam was estimated at up to 9 m (30 ft), with an average annual depositional rate of 5 cm/yr to 18 cm/yr (2 to 7 in./yr) in 1976 (BNWL-2305).

Groundwater beneath the Hanford Site discharges to the Columbia River. The presence of shoreline seeps and springs depends on the water level in the river. Groundwater levels are influenced by fluctuations in river stage, with locations near the river being most strongly affected (FH 1999). In many areas, water flows from the river into the aquifer at high river stages causing local groundwater levels to rise. Movement of river water into bank storage can dilute groundwater and contaminant concentrations in seeps along the river. The flow of groundwater from beneath the Hanford Site into the Columbia River is estimated to be 1 m^3/sec (40 ft^3/sec) (FH 1999).

3.1.4 Site History

3.1.4.1 Cultural History. The Hanford Site and surrounding area was the home of Native American peoples for thousands of years. It contains archaeological sites, traditional and cultural places, and resources. Native groups lived by fishing, hunting large mammals, and gathering plant foods. Celilo Falls on the middle river (now located beneath the pool of The Dalles Dam) was the most important native fishery along the Columbia River (CCRH 2007). Tribal descendents still retain traditional, cultural, and religious ties to the area. Non-Native Americans began intensive settlement in the area in the late 1800s and early 1900s. During this time farming communities grew into thriving towns.

3.1.4.2 River Development. Natural resource and transportation industries were developed on the Columbia River in the late nineteenth century, and included steamboat transportation, mining, and canneries (CCRH 2007). The first cannery opened on the Columbia River in 1864, and at the industry's peak in the 1880s, 39 canneries were present on the river.

Between the 1860s and 1960s, commercial fisheries harvested millions of pounds of fish annually. However, with the construction of dams, irrigation projects, mining, canneries, timber harvesting, and smelters along the Columbia River, steep declines in fish populations resulted due to degradation of the fish spawning habitats.

3.1.4.3 Operational History. The Hanford Site was acquired by the federal government in 1943 and, until 1989, was dedicated primarily to the production of plutonium for national defense. With the shutdown of the production facilities in 1987, missions were diversified to

include research and development in the areas of energy, waste management, and environmental restoration (PNNL-11795).

Radionuclides were released into the Columbia River primarily in the cooling-water effluent from eight single-pass reactors at the Hanford Site. Radioactivity releases began in 1944 when the 105-B Reactor, located farthest upstream at RM 384 of the Columbia River, became operational. The 105-D Reactor (RM 377.6) also began operating in 1944, and the 105-F Reactor (RM 369) subsequently came on line in early 1945. The 105-H Reactor (RM 372.5) was the fourth reactor to come online in 1949, and in 1950 the 105-DR Reactor (RM 377.6) came on line, followed by 105-C Reactor (RM 383.6) in 1952. The last of the eight single-pass reactors, 105-KW Reactor (RM 381.8) and 100-KE Reactor (RM 381.4), both became operational in 1955. Between 1964 and January 1971, all eight single-pass reactors were taken offline permanently (RAC 2002).

3.2 CONCEPTUAL SITE MODEL

A CSM describes a potential contaminant exposure pathway, which is the physical route of a contaminant from the point of release to a receptor. To be complete, an exposure pathway must have several components:

- Contaminant source
- Migration pathway
- Exposure point
- Human or ecological receptor.

If any one of the components is missing, the pathway is considered incomplete. The following is the current CSM that has been developed for the Study Area. Figure 3-1 presents an illustrated view of the Hanford Site CSM including source areas, migration pathways, and exposure points. Figure 3-2 presents an illustrated view of the components of the RCBRA, including that portion of the Columbia River adjacent to the Hanford Site.

3.2.1 Contaminant Sources

This section describes potential current and historical contaminant sources to the Columbia River, including upstream, Hanford Site-related, and downstream sources. While the presence of dams upriver from the site currently limits the transport of contaminants from upstream sources, the magnitude and duration of historical and current discharges may provide a potential for long-range transport to the Hanford Site. As noted earlier, this information was previously presented as part of WCH-91.

The primary sources of contamination in the Study Area are surface water and sediment that have been impacted by both on- and off-site sources of hazardous industrial materials or radionuclides, as well as naturally occurring minerals. Off-site sources are located both upriver and downriver of the Hanford Site. Hanford Site sources are primarily related to historical cooling water discharges and groundwater seeps that discharge to the Columbia River. Potential contaminants of concern include organic compounds, inorganic elements, and radionuclides. The following is a summary of the various sources.

3.2.1.1 Hanford Site Sources. Sources attributable to the Hanford Site are those located from the 100-B/C Area to the southern boundary of the 300 Area. No major tributaries are located along this stretch, but several irrigation return canals flow into the Hanford Reach of the Columbia River along the eastern shore. Primary sources of contamination include historical cooling water discharges from nuclear reactors that contained radionuclides and metals. Historically, the cooling water was discharged into retention basins, which were then discharged to the Columbia River. Other Hanford Site-related sources include the current groundwater plumes from the 100, 200, and 300 Areas that discharge as seeps to the Columbia River.

Past Hanford Site facility air emissions included both radiological and nonradionuclide emissions. Previous studies have shown that residual levels along the Hanford Reach of radiological, hazardous, or toxic materials from Hanford Site stack air emissions are negligible (DOE/RL-2005-49).

3.2.1.1.1 Reactor Releases. Between 1944 and 1971, eight on-Site nuclear reactors released cooling water through large pipes into retention basins. The water was held for a short period of time to allow for decay of short-lived radionuclides and thermal cooling. The water, containing radionuclides from the activation of impurities in the river and treated water, was then discharged directly into the Columbia River via outfall structures. The cooling water also contained radioactive materials that escaped from the fuel elements during the irradiation process. Most of the radionuclides discharged were either small in quantity or had very short half-lives (WCH-91).

Radioactive materials were produced primarily by fission of uranium, activation of nonradioactive materials, and by fission and activation of naturally occurring uranium by neutron capture in reactor coolant water during reactor operations. Radionuclides were created when neutrons in the reactor core activated native elements present in the inlet cooling water from the Columbia River, as well as elements added to the water as part of the water treatment processes. Reactor neutrons also produced radionuclides by activating materials held in the films deposited on the tube and jacket surfaces (RAC 2002).

Radionuclides also entered the river along the shoreline as a result of retention basin leakage and by leaks transmitted through the groundwater to the river. Releases to the shoreline also occurred during high flow conditions where the head drop between the cooling basins and the river was insufficient for gravity-fed flow through the outflow lines. In addition, radionuclide concentrations and distribution in the Columbia River were also determined by seasonal fluctuations in the hydrologic characteristics, and were greatly impacted by the construction of dams across the Columbia River (RAC 2002).

Nonradioactive contaminants in the cooling water discharges included lead and chromium. The lead entered the cooling water from process tubes that were capped with lead-shield plugs that corroded over time. Chromium (in the form of sodium dichromate) was added to the cooling water to inhibit corrosion in the aluminum process tubes (WCH-91).

3.2.1.1.2 Current Groundwater Sources. Contaminants in groundwater originating from the 100 Areas, 200 Areas, and 300 Areas of the Hanford Site are the current and future sources of contaminants to the Columbia River. Surface water and sediment in the current Study Area may be impacted by groundwater seeps that discharge to the river.

100 Area Groundwater Contaminants

The following six areas are sources of contaminants to groundwater in the 100 Area.

100-B/C Area (100-B/C-5 OU). Groundwater contaminants in this area include the following: strontium-90, tritium, nitrate, and chromium. Only strontium-90 and tritium have been detected above the drinking water standards (PNNL-15670).

100-K Area (100-KR-4 OU). Groundwater contaminants in this area include carbon-14, strontium-90, technetium-99, tritium, chromium, nitrate, and trichlorethene (TCE). All of the contaminants except carbon-14 and technetium-99 have been detected at concentrations that exceed drinking water standards (PNNL-15670). Only chromium has been detected at concentrations that warrant remedial actions (PNNL-15670).

100-N Area (100-NR-2 OU). Groundwater carrying mobile radioactive contaminants enters the Columbia River through a series of seeps that are referred to as the N Springs. Groundwater contaminants that exceed drinking water standards in this area include strontium-90, nitrate, and tritium (PNNL-15670).

100-D Area (100-HR-3-D OU). Groundwater contaminants in this area include chromium, strontium-90, tritium, nitrate, and sulfate; however, only chromium, nitrate, and tritium have been detected above their respective drinking water standards (PNNL-15670).

100-H Area (100-HR-3-H OU). Groundwater contaminants in this area include chromium, nitrate, strontium-90, technetium-99, tritium, and uranium. All of these compounds, except tritium, have been detected at concentrations above drinking water standards (WCH-91).

100-F Area (100-FR-3 OU). Groundwater contaminants from this area include chromium, nitrate, strontium-90, tritium, and TCE. All of these compounds, except tritium and chromium, have been detected at concentrations above the drinking water standards (PNNL-15670).

200 Area Groundwater Contaminants

Groundwater contaminants from the 200 West Area do not reach the Columbia River. Groundwater contaminants from the 200 East Area include technetium-99, tritium, uranium, iodine-129, cobalt-60, cyanide, strontium-90, cesium-137, plutonium-239/240, and nitrate. Tritium and nitrate are the only groundwater contaminants from the 200 East Area that currently reach the Columbia River, and of these, only tritium has been detected at concentrations above the drinking water standards (PNNL-15670).

300 Area Groundwater Contaminants

Groundwater contaminants in this area include uranium, cis-1, 2-dichloroethene, TCE, tetrachlorethene (PCE), vinyl chloride, strontium-90, tributyl phosphate, nitrate, tritium, and petroleum hydrocarbons. The only groundwater contaminants from this area that exceed their respective drinking water standards are tritium, nitrate, TCE, cis-1, 2-dichloroethene, and uranium. Contaminants that migrate to the 300 Area from other sources include tritium and nitrate, which migrate from the 200 East Area. Nitrate and TCE originate from non-Hanford Site sources.

Groundwater Seep Contaminants

Many of the contaminants detected in groundwater are also detected in Hanford Site-related seeps on the shoreline of the Columbia River. Radionuclides detected in the seeps include the following:

- Tritium
- Strontium-90
- Technetium-99
- Iodine-129
- Uranium-234
- Uranium-235
- Uranium-238.

Nonradiological contaminants detected in these seeps are primarily metals. With the exception of dissolved chromium, the concentrations of these contaminants were below ambient surface water chronic toxicity levels (PNNL-15670).

3.2.1.2 Off-Site Sources. Six primary off-site source types have been identified and are described below:

- Naturally occurring
- Industrial and mining
- Municipal
- Agricultural
- Nuclear weapons production and atmospheric testing
- Commercial/recreational vessels.

Naturally Occurring Sources

Naturally occurring elements have been detected in sediment and surface water of the Columbia River. The following naturally occurring inorganic elements were detected at background sediment locations: antimony, arsenic, barium, cadmium, manganese, nickel, potassium, and zinc. The naturally occurring radionuclides uranium-234, uranium-238, and potassium-40 were also detected at background sediment locations.

Aluminum, arsenic, barium, cadmium, manganese, and elemental uranium were detected in surface water samples from background locations. In addition, the following radionuclides were detected in background samples and are also naturally occurring in surface water: tritium, uranium-234, and uranium-238. While these elements and radionuclides are naturally occurring in the environment, their presence in sediment and surface water upstream of the Hanford Site is not necessarily representative of natural conditions, and may be related to upstream or off-site sources (e.g., industrial, agricultural, or mining).

Industrial and Mining Sources

Current and historical industrial activities and processes that may lead to or may have led to point source releases to the Columbia River include aluminum production, pulp and paper mills, chemical production, and electrical power generation. Types of contaminants that may have been (or are being) released from facilities within the CRC include fluoride, aluminum, ammonia,

nitrate, organic halides, dioxin, volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs). These facilities include National Pollutant Discharge Elimination System (NPDES) permitted, nonpermitted, and CERCLA facilities (WCH-91). The majority of these major industrial NPDES permits are associated with either pulp and paper, or aluminum facilities. Only one such aluminum smelting facility is located upstream of the Hanford Site in Wenatchee, Washington while eight CERCLA sites were identified downstream from the Hanford Site along the Columbia River channel. These sites discussed in Sections 3.2.1.2.1 and 3.2.1.2.2 may have released, or may continue to release, wastes from aluminum, wood treatment, plating, and land disposal facilities.

Runoff from mining and milling operations along the tributaries feeding the Columbia River upstream of the Hanford Site is a potential source of metals contaminants. An example is the mining operations at Teck Cominco Mine in Trail, British Columbia (see Section 3.2.1.2.1). Large amounts of ore process wastes containing arsenic, cadmium, copper, lead, mercury, and zinc were also produced at locations in Washington, Idaho, and Canada from mining operations.

Aluminum smelters are also sources of contaminants to the Columbia River. Aluminum smelters downriver of the Hanford Site include the sites in Vancouver, Washington, Goldendale, Washington, and Troutdale, Oregon (see Section 3.2.1.2.1).

The Alcoa aluminum smelter in Vancouver, Washington, is a 121 ha (300-acre) site that lies on the northern bank of the Columbia River. In 1940, the facility began operating a primary aluminum smelter and support facilities. Approximately 66,000 tons of potliners (special lining material used to protect steel pots where molten aluminum is processed) containing cyanide and fluoride were piled on the ground from 1973 to 1981. Groundwater and soil are contaminated and leaching to the river.

The Alcoa aluminum smelter located in Troutdale, Oregon, was built and operated by Alcoa from 1941 to 1945 for the U.S. Department of Defense. Aluminum production was temporarily curtailed in June 2000, and the facility was permanently closed in July 2002. As part of the aluminum production process, waste materials were generated that consisted of spent potlining and reclaimed insulation containing cyanide, fluoride, and metals (Hart Crowser 1987).

Goldendale Aluminum Company commenced operations as Martin Marietta in November, 1971. In late 1984 Martin Marietta sold the facility to Commonwealth Aluminum. Commonwealth operated the facility from 1985 through February 1987, when they closed the facility. The facility resumed operations under Columbia Aluminum Corporation from August 1987 through May 1996, when the Goldendale Aluminum Company assumed operations. In December 2000, the smelter temporarily curtailed 90% of its production due to lack of a predictable power supply. Contaminants of interest that might be released include fluoride, oil and grease, benzo(a)pyrene, nickel, and arsenic.

Municipal/Urban Sources

Municipal and urban activities contribute as point and nonpoint sources of contamination to the river. Other NPDES permitted discharges to the Columbia River include stormwater, minor industrial process wastewater, contact and noncontact cooling waters, treated waters, construction sites, and domestic facilities. Effluents from municipal sewage treatment plants also contribute to waste loading within the Columbia River system. A total of 41 municipal sewage treatment plants were identified in 2005 that discharge effluent to the Columbia River within the Study Area.

Urban contributions including nonpermitted residential and commercial stormwater runoff, residential use of fertilizers and pesticides, and septic sewage systems are some of the potential sources of contamination from communities along the banks of the Columbia River. Storm water runoff can contain a number of contaminants such as pesticide and weed control products, contamination from leaking transformers, hydraulic and lubricating fluids, petroleum products, metals, polyaromatic hydrocarbons (PAHs), and deicing salts. Runoff containing naturally occurring contaminants such as uranium also contributes to surface water contamination.

Agricultural Sources

By the 1920s, major irrigation projects along the Columbia River and tributaries operated with the benefit of federal programs. Major dam building along the Columbia River began in the 1930s and 1940s with the construction of Bonneville Dam in 1937 and Grand Coulee Dam in 1941. In 1948, the Columbia Basin Project began transporting Columbia River water by canal to the more than 600 thousand acres of farms in central Washington (CCRH 2007). By 1975, 11 dams had been constructed on the mainstem of the Columbia River, with many additional dams on the major tributaries.

Agricultural activities are a potential source of contamination to the Columbia River via transport mechanisms such as runoff or irrigation returns that discharge to the Columbia River. Water from the irrigation returns in the Hanford Reach has been sampled to evaluate the effects of nutrient contributions from agriculture on surface waters. Contributions from these agricultural activities primarily consist of nitrogen, phosphate, copper, and suspended solids (Ecology 1981).

Sampling of irrigation return water from Franklin County and associated irrigation-related seeps entering the Columbia River, opposite the Hanford Site, have measured total uranium values of 8.6 pCi/L (PNNL-7500). Uranium is commonly present in phosphate-based fertilizers and is a natural constituent that weathers from some types of rocks in the region. In recent years, total uranium concentrations in the Hanford Reach have been elevated along the Franklin County shoreline. Previous studies have indicated these elevated concentrations are likely the result of groundwater seepage and water from irrigation returns that contain naturally occurring uranium.

Nuclear Weapons Production and Atmospheric Testing

Worldwide atmospheric nuclear testing contributed to radionuclide contaminants in surface waters and ultimately to sediments throughout the Pacific Northwest. Fallout from atmospheric testing by the United States, Russia, and China contributed significantly to radionuclide levels in the environment until 1963 (WDOH 1994). The Nuclear Test Ban Treaty ended aboveground testing by the United States and Russia in 1964, and China continued limited aboveground testing until 1977. The fallout materials consisted primarily of long-lived radionuclides such as cesium-137 and strontium-90, along with shorter-lived radionuclides such as cerium-141, zirconium-95/niobium-95, and ruthenium-103/106 (WDOH 1994). Strontium and cesium are also associated with Hanford Site operations. The Soviet nuclear reactor accident at Chernobyl in 1986 also produced detectable levels of iodine-131 and cesium-137 in precipitation in Oregon (WDOH 1994).

Commercial/Recreational Vessels

Recreation and commercial activities on the Columbia River also contribute contamination to surface water and sediments via marinas, boats, or other recreational watercraft. Discharge of bilge and ballast water, engine oil, spills, and materials associated with boat and shipyard maintenance are potential sources of contamination. These sources may contain old paint scrapings (lead), anti-foulants (copper), solvents, oil and grease, fuels, PCBs, and cleaning agents. Vessel traffic and dredging activities within the marinas or shallow navigation channels can also resuspend sediments that may contain metals, nutrients, organic matter, and toxins into the water. Pilings, docks, and bulkheads associated with marine structures treated with creosote, chromated copper arsenate, or copper zinc arsenate are other sources of contamination.

3.2.1.2.1 Upstream Sources. Contributions of contaminants to the Columbia River may come from direct sources to the river or indirect sources where the direct source is to the tributaries that later join the Columbia River. Examples of direct and indirect sources include mining operations, smelting, pulp and paper production, runoff from cities and agricultural areas, treatment plants, and other activities that release materials that reach the river.

Mining operations at Teck Cominco Mine in Trail, British Columbia, located 16 km (10 mi) north of the United States/Canada border, began in 1890, with smelter operations beginning in 1896 along the headwater of the Columbia River. These operations began prior to the construction of any dams along the Columbia River. The lead and zinc smelter on the banks of the Columbia River at the Trail facility dumped an estimated 10 million to 20 million tons of slag into the river. The facility released dissolved iron, manganese, zinc, copper, lead, arsenic, cadmium, and mercury via liquid effluent and as solids in the form of slag, a smelting byproduct (WHC-SA-1989-FP). The EPA Region 10 contends that the smelter is the largest source of metals pollution in Lake Roosevelt, a reservoir created when the river was blocked behind Grand Coulee Dam in 1937. In 2006, an EPA study of sediment samples concluded that the portion of the lake from Inchelium, Washington upstream to the Canadian border already qualified for Superfund listing because of hazards to aquatic life from heavy metals (CH2MHill 2006). The metals flow down the river into Lake Roosevelt. Contaminants from this facility may exist downstream of Grand Coulee Dam within the Hanford Reach.

Other smelting operations have taken place in Northport, Washington (EPA 2004a). The Celgar pulp mill in Castlegar, British Columbia, was a primary source of historical loading of dioxins and furans to the Upper Columbia River (EPA 2004c). Alcoa's aluminum smelter facility in Wenatchee, Washington is currently the only major U.S. industrial NPDES permitted facility located upstream of the Hanford Site. It may contribute the following contaminants to the Columbia River: fluoride, aluminum, copper, benzo(a)pyrene, cyanide, oil, and grease (WCH-91). There are also nine municipal treatment plants that discharge effluent to the river upstream of the Hanford Site (WCH-91).

Examples of indirect sources could come from almost any of the Columbia River tributaries. Major tributaries upstream of the Hanford Site include the Okanogan and Wenatchee Rivers. In addition, the Spokane River has elevated levels of PCBs and metals. Some of the sources include the following:

- Mining waste and the associated metals that may have been transported downstream from the Coeur d'Alene Basin to the Spokane River.

- Midnite Mine, an open-pit uranium mine, operated along the Spokane River in the Selkirk Mountains of eastern Washington from the mid-1950s until 1981and contributed contaminants upriver of the Hanford Site. Two open pits, backfilled pits, and a number of waste rock piles and ore and protore (low-grade ore) stockpiles remain on site. In addition to elevated levels of radioactivity (primary uranium), heavy metals mobilized in acid mine drainage pose a potential threat to human health and the environment (EPA 2006c). Seeps and surface runoff containing elevated levels of metals and radionuclides enter drainages leading to Blue Creek, which flows into the Spokane River (EPA 2006c).

- Kaiser Trentwood, an aluminum plant, discharged PCBs to the Spokane River in excess of 2 kg/day in the early 1990s and as late as 2000 (Serdar et al. 2006).

- The Spokane Wastewater Treatment Plant discharged 0.25 kg/day of PCBs in 2001 (Serdar et al. 2006).

These examples show some of the historical and continuing sources that provide the challenge of identifying and controlling sources that contribute pollutants to the Columbia River.

3.2.1.2.2 Downstream Sources. The downstream portion of the Columbia River consists of areas downstream of the Hanford Site. Eight CERCLA sites are located downstream of the Hanford Site. The types of contamination associated with these sites include ammonia, aluminum, arsenic, chromium, cadmium, copper, nickel, lead, cyanide, fluorides, fuel oil, PCBs, creosote components, pentachlorophenol, PAHs, VOCs, and SVOCs (WCH-91). Contaminants of interest that might be released from the Umatilla Army Depot (lagoons) located in Hermiston, Oregon, are heavy metals, trinitrotoluene, and cyclonite. The Union Pacific Railroad Tie Treatment and Martin Marietta Aluminum Company (now Northwest Aluminum Company) sites are located in The Dalles, Oregon. Combined contaminants of interest that might be released from these facilities are creosote, pentachlorophenol, fuel oil, ammonia, arsenic, cyanide, fluoride, asbestos, and PAHs (WCH-91). Five additional CERCLA sites include Reynolds Metals in Troutdale, Oregon; Allied Plating, Inc. in Portland, Oregon; Alcoa, an aluminum smelter, in Vancouver, Washington; Frontier Hard Chrome, Inc. in Vancouver, Washington; and Hamilton Island Landfill in North Bonneville, Washington. The combined contaminants of interest for these facilities include PAHs, aluminum, cyanide, fluoride, PCBs, arsenic, heavy metals (including chromium, nickel, and lead), VOCs, and SVOCs.

Four NPDES major industrial discharge permits are for facilities located downstream of the Hanford Site. AGRIUM is a fertilizer facility located in Kennewick, Washington, and releases may include ammonia and nitrate. Boise Paper Solutions is a pulp and paper mill located in Wallula, Washington. Goldendale Aluminum is an aluminum smelter located in Goldendale, Washington, and Northwest Aluminum Company is located in The Dalles, Oregon. Combined contaminants of interest that might be released from these facilities include fluoride, oil and grease, cyanide, benzopyrene, nickel, and arsenic (WCH-91).

Agricultural activities can be found throughout the Columbia Basin and along the Columbia River above the Hanford Site and adjacent to the Columbia River in downstream locations. Agricultural activities historically contribute runoff containing fertilizers, sediments, pesticides, and herbicides to the surface waters. The higher populated downstream region of the Columbia River contains more commercial and recreational vessel use than the upstream region.

3.2.2 Migration Pathways

To aid in the evaluation of sample distribution for the Data Gap Analysis, contaminant transport (river flow, depositional areas, etc.) was characterized and exposure pathways and receptors, both human and ecological, were assessed. Contaminant transport in the Columbia River adjacent to and downriver of the Hanford Site is primarily a function of the flow characteristics of the river. Because the 82 km (51-mi) stretch of river adjacent to the Hanford Site has never been impacted by dam construction, the river is characterized by a swift current and a generally gravel-and-cobble bottom characteristic of fast-water environments. This characteristic applies particularly to the main channel of the river and the outer bends of the river in the "Horn" area north of the Hanford Site; water velocity in these areas tends to keep the bottom relatively scoured of fine-grained sediments. In addition, the periodic episodes of high flow that result from large releases at the upriver Priest Rapids Dam serves to prevent the development of permanent deposits in the main channel.

Several studies have been completed that evaluate the transport and deposition of sediment in the river. These documents were reviewed in preparation for the data gap analysis. In addition, the project team for the CRC includes experts in the current configuration of the river under various flow regimes. Information from both of these sources was used in identifying data gaps. Further evaluation of sedimentation areas will be conducted during the DQO process.

Depositional areas for fine-grained sediment exist primarily in the sloughs and backwaters that exist in some areas on the shores of the river. Large sloughs are present downriver of the 100-F Area and the Hanford Townsite, but smaller sloughs exist at various locations along the river shoreline. In addition, areas adjacent to and downstream of islands, some of which are regularly inundated, also offer protected areas where fine-grained material may be deposited.

As described in Section 3.2.1, contaminants, primarily radionuclides, metals, and organic compounds, were released to the river through both groundwater and direct discharge. Compounds dissolved in the water column would be quickly diluted and transported off-site by the large volume of relatively fast-flowing water, and this phenomenon is reflected by the generally very low concentrations of constituents currently detected in surface water. Thus, much of the historical contaminant load in surface water was likely transported downriver during the time of high discharge during the main operating period of the reactors. In addition, the majority of radionuclides have relatively short half-lives and are no longer present in the river system.

However, many contaminants such as metals and some organics tend to bind to organic material in sediment or adhere to the surfaces of fine-grained sediment particles. These constituents are transported along with the fine-grained sediment, and so have the potential to accumulate in depositional areas. Significantly, these contaminants are not expected to be present in the main channel of the river or to distribute over large areas of the river, because the river current prevents the deposition of sediment in the bulk of the river corridor. Rather, contaminants would be present in the sloughs, depositional beaches, and side areas along the river channel where river velocity decreases and fine-grained material accumulates. Moreover, the frequent variation in river flow would keep these areas in a state of flux, as sediment is resuspended in high water and redistributed downstream.

The transport of sediment-associated contaminants downriver is thus not a uniform process, but rather a highly flow-dependent phenomenon that will result in the deposition of material at

specific depositional areas in the river. This understanding is key to formulating the spatial component of the Data Gap Analysis.

3.2.3 Exposure Pathways and Receptors

To evaluate data in this report, surface water and sediment data were compared to human and ecological risk-based criteria, and the selection of those criteria entails assumptions about exposure pathways and receptors. As shown above, surface water and sediment are the transport media for site contaminants and therefore constitute the exposure media for both human and ecological receptors. Because the surface water and sediment are utilized by both humans and biota, a complete exposure pathway exists between the Hanford Site sources and these receptors. Figure 3-3 presents a preliminary Conceptual Exposure Model.

As described in Section 2.5, various state and federal human health-based water quality criteria were used to evaluate surface water data in this Data Gap Analysis. These criteria reflect the use of the river water as a drinking water source, which overestimates actual Hanford Site use but is appropriately conservative for screening purposes. Likewise, effects of human exposure to sediment are estimated by the use of soils standards, which likewise reflect residential use. Since sediment cannot be used in the ways assumed for the generation of residential soil standards, these soils values also over-represent actual potential levels of effect on human health. However, since a complete exposure pathway exists between the Hanford Site and human receptors, use of these regulatory criteria or guideline is adequate for conservatively identifying study analytes, as described in Section 2.0.

More realistic human health exposure scenarios may be used in subsequent risk evaluation efforts. As detailed in the 100/300 Area RCBRA, site-specific potential exposure scenarios have been developed that describe potential exposure pathways and receptors for actual users of the Hanford Reach of the Columbia River. These site-specific scenarios, which require detailed and site-specific risk calculations, were not used during the Data Gap Analysis, but may be used in future assessments. These are as follows:

- **Rural Residents**. This scenario includes both adults and children. Potential routes of exposure to contaminated sediment and surface water include incidental ingestion and dermal contact during a variety of recreational activities. The Rural Residents could also potentially be exposed to contaminants through consumption of fish from the river.

- **Native American**. This scenario includes local and regional Native Americans who have ties to the Hanford Reach of the Columbia River and surrounding lands. Potential routes of exposure to contaminated sediment and surface water include incidental ingestion and dermal contact during a variety of activities including swimming or other cultural activities. The Native American could also potentially be exposed to contaminants through consumption of fish from the river.

- **Hanford Reach National Monument Worker**. The Monument Worker is an adult worker who is assumed to work in an off-site facility, but spends several days each week on the site. Potential routes of exposure to contaminated sediment and surface water include incidental ingestion of and dermal contact during a variety of activities.

- **Avid Angler**. The Avid Angler scenario includes both adults and older children (older than age 6). Potential routes of exposure to contaminated sediment and surface water include

incidental ingestion and dermal contact while fishing or swimming in the river. The Avid Angler could also potentially be exposed to contaminants through consumption of fish from the river.

- **Casual User**. The Casual User is an adult or child individual who uses the Columbia River for recreational purposes. It includes adults and youth who may swim, boat, camp, or participate in other activities along the river. Potential routes of exposure to contaminated sediment and surface water include incidental ingestion and dermal contact during these recreational activities. The Casual User could also potentially be exposed to contaminants through consumption of fish from the river.

Criteria and benchmarks for ecological receptors are more straightforward. Sediment and surface water are the exposure media for ecological receptors, and those with the highest potential exposure are aquatic organisms that live in the water column (fish) or in or on the sediment (benthic fish and invertebrates). The ecological criteria and benchmarks considered for this report were based on the protection of aquatic life from the effects of direct toxicity from site contaminants in either media and therefore are appropriately reflective of actual exposures that these ecological receptors would experience.

Both human health and ecological screening values are used in the evaluations described in Section 4.0.

Figure 3-1. Hanford Conceptual Site Model (WCH-71).

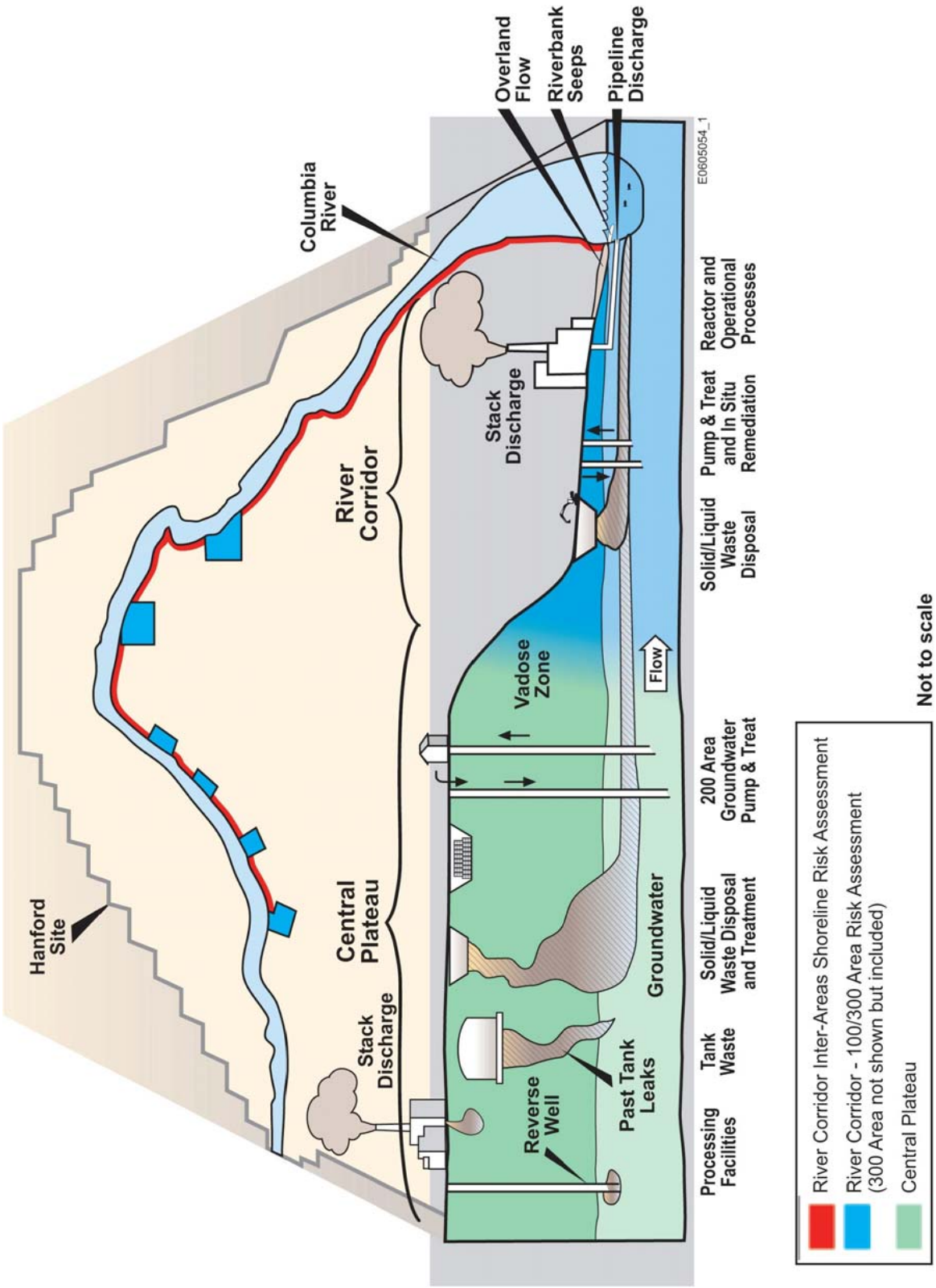


Figure 3-2. Study Zones of the Components of the RCBRA on the Hanford Site.

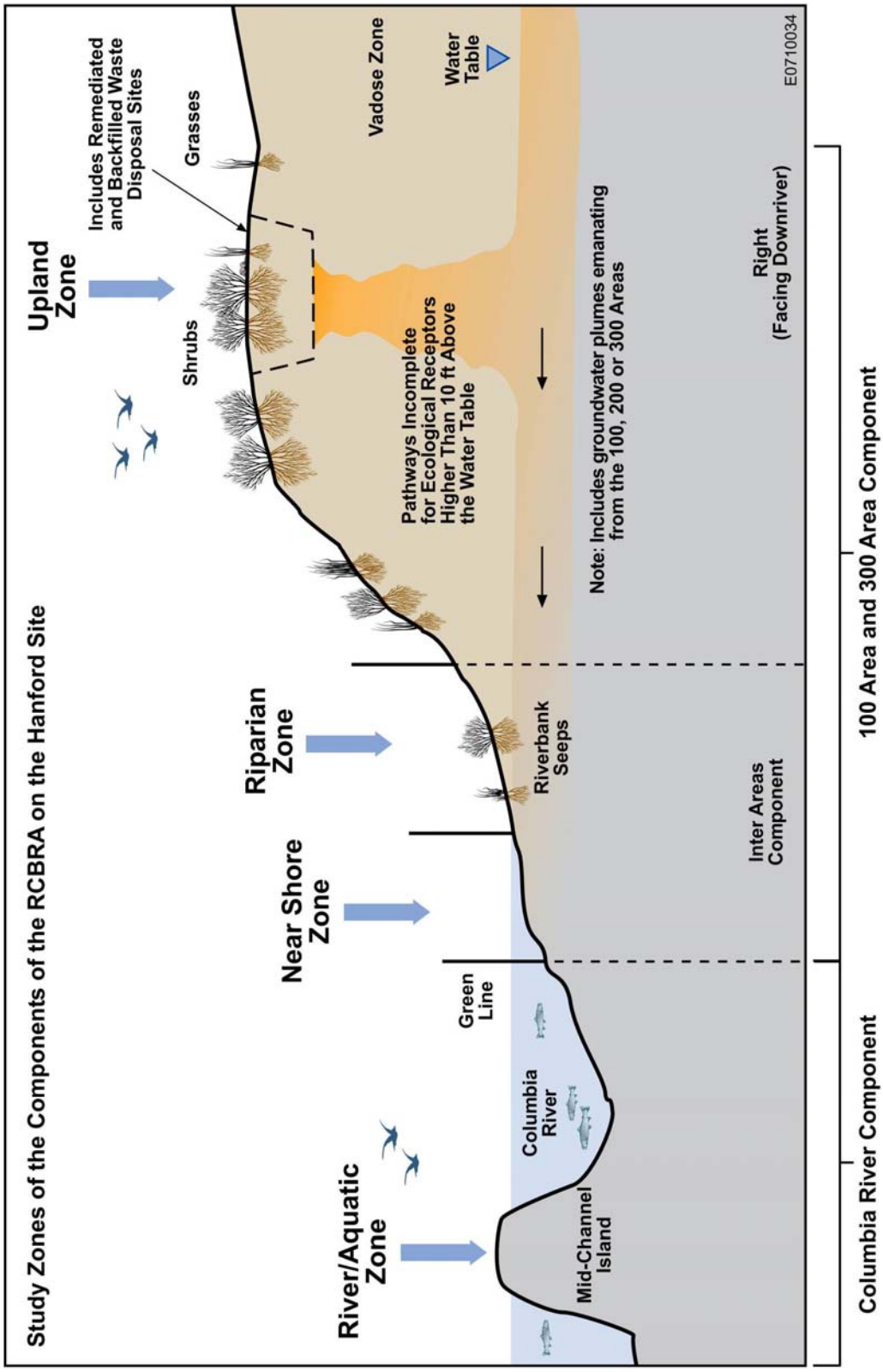
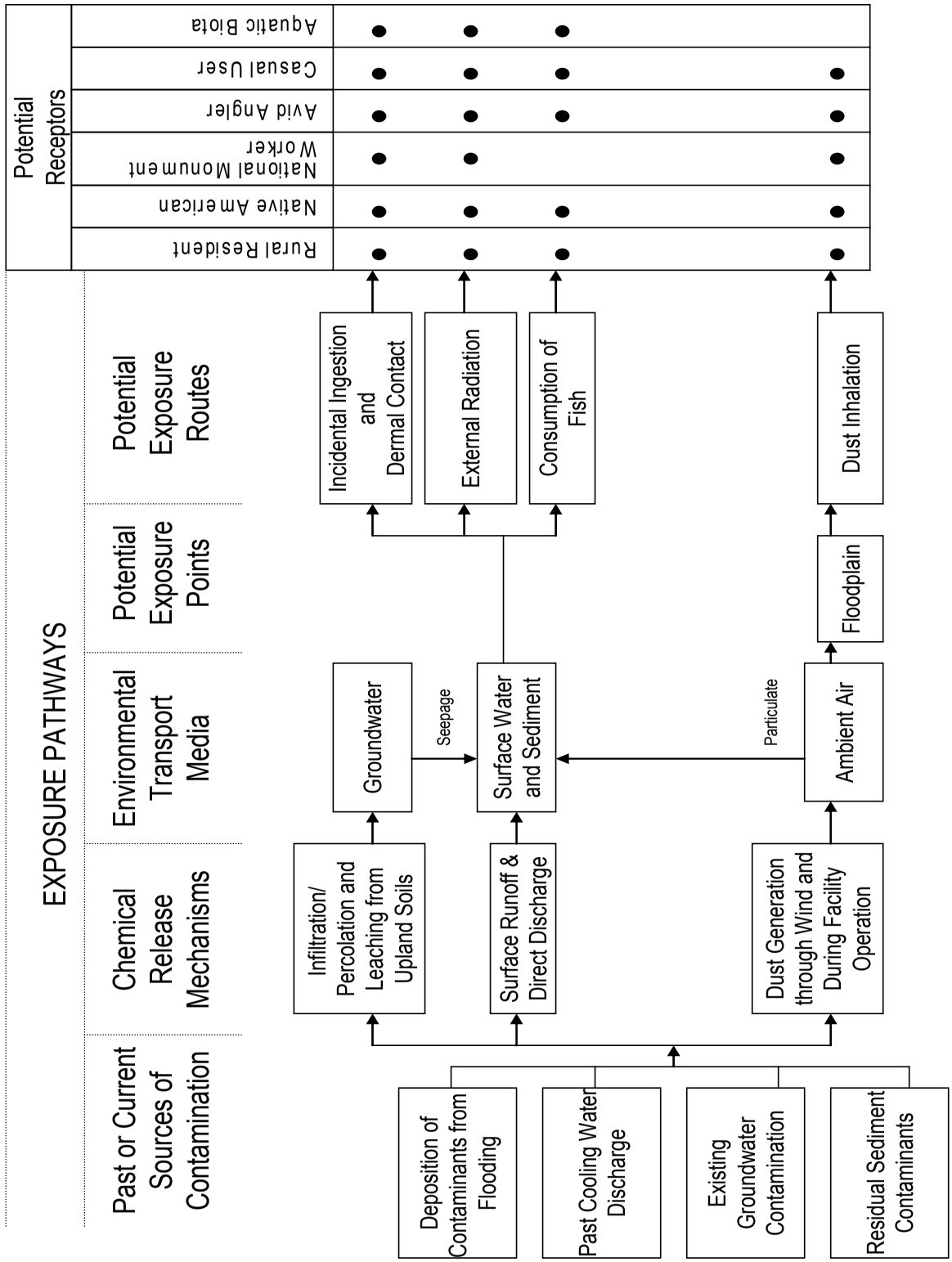


Figure 3-3. Preliminary Conceptual Exposure Model.



4.0 IDENTIFICATION OF SPATIAL AND TEMPORAL TRENDS AND STUDY AREA BOUNDARIES

This section presents the results of Steps 3 and 4 of the evaluation process: the Evaluation of Spatial and Temporal Trends (Step 3) and the Identification of Study Area Boundaries (Step 4). Both of these steps involve a broad review of data from the Hanford Site and downstream areas, and provide a framework for subsequent evaluations. The results of these analyses are presented below.

4.1 SPATIAL AND TEMPORAL DISTRIBUTION

As described in Section 2.3, the first step in this process was to plot the locations of all surface water and sediment samples within the combined database (see Section 2.1) to assess spatial distribution in the Study Area from above Priest Rapids Dam to the Pacific Ocean. Based on the Hanford Site operational history, dam locations, and data density, the river was divided into the following three sections to facilitate assessment, presentation, and discussion:

- River Section I – This section of the Columbia River is upriver from the Hanford Site and extends from the Vernita Bridge (River Mile [RM] 388, considered the upstream boundary of the Hanford Site) to Grand Coulee Dam.

- River Section II – This section of the Columbia River extends from Vernita Bridge (RM 388) downriver to McNary Dam (RM 292). This 154 km (96-mi) stretch includes the 82 km (51-mi) stretch referred to as the Hanford Reach.

- River Section III – This section of the river extends from below McNary Dam to the outlet of the Columbia River at the Pacific Ocean.

Figure 2-1 shows the three river sections. Figure 4-1 provides a plot of all sediment and surface water sample locations, dam location, and river sections. To illustrate the temporal distribution of these data, Figure 4-2 presents the number of sediment samples, plotted as a function of time for all three river sections. As shown in this figure, there was a significant sediment sampling effort in 1976 (post-shutdown of the last single-pass cooling water reactor in 1971) related to core sampling of deep sediments behind each of the dams from Priest Rapids down to the mouth of the Columbia River (see Section 4.1.4). Figure 4-2 represents a total of more than 2,100 sediment samples. Aside from the 1976 sediment sampling event, the majority of these samples have been collected in the past 16 years since the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) was signed on May 15, 1989 (Ecology et al. 1989).

Figure 4-3 is a plot of surface water samples collected as a function of time. Unlike the sediment data, which date back to 1976, the database only includes analytical results for surface water back to 1999. These data are considered representative of current contaminant concentrations potentially being transported to adjacent and downstream locations and are sufficient to characterize surface water quality because of the inherent transient nature of this medium (WCH-91). While historical surface water may have had concentrations of constituents that varied from more recent concentrations, the present-day effect of historical concentrations would be reflected by the present-day composition of sediment, which bind and thus retain

many contaminants over time. Sediment is evaluated in this report as a separate medium. Historical surface water constituents that do not bind to sediments would no longer be present in the Columbia River due to natural flow and flushing. As shown on Figure 4-3, between 1999 and 2005 more than 600 surface water samples were collected annually. The following discussion presents these data from each river section.

Table 4-1 presents the number of sediment and surface water sample locations by river section and year. As shown in Table 4-1, more than 250 sediment locations have been sampled in River Section I; more than 1,200 in River Section II; and more than 650 in River Section III. As shown in Table 4-1, more than 1,000 surface water locations have been sampled in River Section I; more than 4,100 in River Section II; and approximately 350 in River Section III.

As noted in Section 2.1, the database is not inclusive of all available data sets. It has been constructed using available data sets that are proximal to the Hanford Site and therefore are focused on Hanford Site-related contaminants. Several data sets from above Priest Rapids Dam and below McNary Dam have not been included. The focus of this Data Gap Analysis is the effects of Hanford Site-related contaminants. Because of the numerous other source areas both upriver and downriver of the Hanford Site, this study is focused on evaluating data needs to determine the effects in proximity to the known Hanford Site source areas.

4.1.1 River Section I

River Section I includes data from upriver of the Vernita Bridge (Figure 4-1). Because the focus of this evaluation is potential impacts caused by the operations conducted at the Hanford Site, the database does not include the extensive sample results collected in Lake Roosevelt behind Grand Coulee Dam or upstream on the Spokane River. While general observations or conclusions from a number of these studies are used to discuss results and identify upstream sources of contaminants, these data were excluded from this presentation and analysis. The majority of samples included in this river section analysis were collected from behind Priest Rapids Dam to the Vernita Bridge, along approximately 32 km (20 mi) of river. Figure 4-4 presents sediment and surface water sampling locations upriver of the Vernita Bridge.

4.1.1.1 Sediment – River Section I. Table 4-2 provides a summary of sediment sampling results from River Section I by year and major analyte. From 1976 to 2006, more than 6,600 sediment analyses were completed from approximately 250 upriver sampling locations; of these results approximately 2,300 were reported above the PQL (detection limits), resulting in approximately 4,300 reported as nondetects.

Results for the majority of the analyses listed in Table 4-2 are summarized as follows:

- VOCs – more than 610 analyses for VOCs
- SVOCs – more than 670 analyses for SVOCs
- Metals – more than 1,400 analyses for metals;
- Pesticides/PCBs – more than 1,570 analyses for pesticides/PCBs
- Radionuclides – more than 1,400 analyses for radionuclides.

These data were primarily used to establish background concentrations in sediments that were sources from upriver (see Section 3.2.1.2.1 for a discussion of upriver sources).

4.1.1.2 Surface Water – River Section I. Table 4-3 provides a summary of surface water sampling results from River Section I by year and major analyte. From 1999 to 2006, there were over 8,700 surface water analyses from over 1,000 upriver sampling locations; of these results, approximately 4,300 were above the PQL, resulting in approximately 4,400 reported as nondetects.

Results for the majority of the analyses listed in Table 4-3 are summarized as follows:

- VOCs – more than 790 analyses for VOCs
- SVOCs – 110 analyses for SVOCs
- Metals – more than 2,900 analyses for metals
- Pesticides/PCBs – more than 260 analyses for pesticides/PCBs
- Radionuclides – more than 3,100 analyses for radionuclides.

These data were used to establish background concentrations in upriver surface water (see Section 3.2.1.2.1 for a discussion of upriver sources).

4.1.1.3 Conclusion. Based on the analysis of the spatial and temporal distribution of sediment and surface water sample locations including analytes upriver of the Hanford Site, there are sufficient data to develop background concentrations for Hanford Site-related contaminants. There do not appear to be significant data gaps associated with this section of the river.

4.1.2 River Section II

River Section II includes data between the Vernita Bridge (RM 388) and McNary Dam (RM 292) (Figure 4-1). This river section is dominated by the 89 km (55 mi) of the Hanford Reach and the 74 km (46-mi)-long Lake Wallula (McNary Dam impoundment). River Section II includes the confluence of three major rivers: the Yakima at RM 333, the Snake at RM 325, and the Walla Walla at RM 315. Figure 4-5 presents sediment and surface water sampling locations in River Section II.

4.1.2.1 Sediment – River Section II. Table 4-4 provides a summary of sediment sampling results from Section II by year and major analyte. From 1976 to 2006, there were over 23,000 sediment analyses completed from over 1,200 River Section II sampling locations; of these results approximately 11,000 were reported above the PQL (detection limits), resulting in approximately 12,000 reported as nondetects.

Results for the majority of the analyses listed in Table 4-4 are summarized as follows:

- VOCs – more than 900 analyses for VOCs
- SVOCs – more than 940 analyses for SVOCs
- Metals – more than 6,100 analyses for metals
- Pesticides/PCBs – approximately 3,380 analyses for pesticides/PCBs
- Radionuclides – more than 8,700 analyses for radionuclides.

4.1.2.2 Surface Water – River Section II. Table 4-5 provides a summary of surface water sampling results from River Section II by year and major analyte. From 1999 to 2006, there were over 45,100 surface water analyses from over 4,200 Section II sampling locations; of these results approximately 23,700 were reported above the PQL resulting in approximately 21,400 reported as nondetects.

Results for the majority of the analyses listed in Table 4-5 are summarized as follows:

- VOCs – more than 3,700 analyses for VOCs
- SVOCs – 748 analyses for SVOCs
- Metals – more than 19,500 analyses for metals
- Pesticides/PCBs – more than 1,700 analyses for pesticides/PCBs
- Radionuclides – more than 12,800 analyses for radionuclides.

4.1.2.3 Conclusions. Based on the analysis of the spatial and temporal distribution of sediment and surface water sample locations and analytes within River Section II (Hanford Reach to McNary Dam), no temporal data gaps were identified. However, three potential data gaps appear based on limited spatial distribution:

1. Sloughs on the left shore of the river (sediments and surface water)
2. Islands directly downstream of known source areas (sediments only)
3. Depositional areas at the upstream end of Lake Wallula (sediments and surface water) and sediments near McNary Dam.

4.1.3 River Section III

River Section III includes data between McNary Dam (RM 292) and the mouth of the Columbia River (Figure 4-1). This river section includes three major dams: John Day Dam at RM 215, The Dalles Dam at RM 191, and Bonneville Dam at RM 146. This river section also includes the confluence of eight major rivers: the Umatilla, the John Day, the Deschutes, the Klickitat, the White Salmon, the Willamette, the Lewis, and the Cowlitz Rivers. The lower Columbia River has numerous current and historical industrial activities that have had a measurable negative impact on surface water and sediment quality (see Section 3.0 of this report for a more detailed discussion of these sources). Figure 4-6 presents sediment and surface water sampling locations in River Section III.

4.1.3.1 Sediment – River Section III. Table 4-6 provides a summary of sediment sampling results from River Section III by year and major analyte. From 1976 to 2006, there were more than 14,000 sediment analyses from over 800 Section III sampling locations; of these results approximately 7,000 were reported above the PQL (detection limits), resulting in approximately 7,000 reported as nondetects.

Results for the majority of the analyses listed in Table 4-6 are summarized as follows:

- VOCs – more than 1,980 analyses for VOCs
- SVOCs – more than 860 analyses for SVOCs
- Metals – more than 3,280 analyses for metals
- Pesticides/PCBs – over 3,520 analyses for pesticides/PCBs
- Radionuclides – more than 2,490 analyses for radionuclides.

4.1.3.2 Surface Water – River Section III. Table 4-7 provides a summary of surface water sampling results from River Section III by year and major analyte. From 1999 to 2006 there were more than 5,700 surface water analyses from approximately 350 Section III sampling locations; of these results approximately 2,700 were reported above the PQL, resulting in approximately 3,000 reported as nondetects.

Results for the majority of the analyses listed in Table 4-7 are summarized as follows:

- VOCs – more than 240 analyses for VOCs
- SVOCs – 16 analyses for SVOCs
- Metals – more than 1,200 analyses for metals
- Pesticides/PCBs – more than 2,700 analyses for pesticides/PCBs
- Radionuclides – 40 analyses for radionuclides.

4.1.3.3 Conclusions. Based on the analysis of the spatial and temporal distribution of sediment and surface water sample locations and analytes current in the Data Gap Analysis database, it would appear that there may be temporal and spatial related data gaps in River Section III. However, there are two key mitigating factors that significantly influence whether supplemental sampling is needed in this section:

- Because of the relatively high number of known non-Hanford Site downriver contaminant sources, it would be difficult to differentiate Hanford from non-Hanford Site sources downriver. In addition, the most significant Hanford Site-related contaminants present downriver are very low concentrations of residual radionuclides. Therefore, additional sampling downriver of McNary Dam would not be beneficial for conducting the anticipated Hanford Site risk screening evaluation of the Columbia River.

- EPA Region 10 is currently compiling new and existing data from 2004 and 2005 from the lower Columbia River. At the time of this report these data were not published and therefore not included; a review of these data may be helpful during the DQO process.

As stated above, this Data Gap Analysis assumes that near-source areas will pose the highest relative concentration of Hanford Site-related contaminants and therefore present the greatest potential risks. The purpose of this Data Gap Analysis is to determine if there are sufficient data to characterize the current effects of Hanford Site operations on the Columbia River. Therefore, it is focused on those areas that should contain the highest concentration of Hanford Site-related material. At this time it, is not anticipated that additional sampling in River Section III is required. This determination should be assessed after a review of EPA's lower Columbia River assessment and DQO processes are published.

4.1.4 Sediment Core Sampling

Data from the 43 sediment cores from Priest Rapids Dam to the Pacific Ocean have been included in the database. These results are presented by the same river sections as used above.

Figure 4-7 presents the location of these sediment cores in the entire Study Area. These cores were collected in one of two ways: gravity or piston coring devices. Gravity coring devices are generally 15 cm in diameter with the ability to penetrate up to approximately 55 cm (22 in.) below the sediment surface. The piston coring device was used to collect deeper sediments up

to 300 cm (118 in.) below the sediment surface. After the cores were retrieved they were capped and frozen in plastic barrel liners. At the laboratory these liners were cut into subsamples of generally 2 to 3 cm (0.8 to 1 in.). These core locations and results are discussed below by river section.

4.1.4.1 Sediment Cores - River Section I. Three sediment cores were collected from the sediment directly behind Priest Rapids Dam. These cores were divided into subsamples (approximately every 2 cm [0.8 in.] of core) into approximately 100 samples. From 1976 to 2001, there were 380 sediment core analyses for River Section I, with 118 reported above the PQL and approximately 260 reported as non-detects.

As presented in Table 4-8, results for the majority of the analyses in River Section I are summarized as follows:

- VOCs – 6 analyses for VOCs
- SVOCs – 3 analyses for SVOCs
- Metals – 19 analyses for metals
- Pest/PCBs –164 analyses for pesticides/PCBs
- Radionuclides – 100 analyses for radionuclides.

These data were primarily used to establish background concentrations in deep (or historical) sediments sources from upriver or from atmospheric testing of nuclear weapons (see Section 3.2.1.2 for a discussion of off-site sources).

4.1.4.2 Sediment Cores - River Section II. Twenty-four sediment cores were collected from River Section II as shown in Figure 4-7. From 1976 to 2001, there were over 1,700 sediment core analyses for River Section II, with 1,226 reported above the PQL and over 475 reported as non-detects.

Hanford Reach - Four cores (HR-2, HR-3, HR-4, and H-4) were collected from the Hanford Reach.

Lake Wallula - Twenty cores were collected from Lake Wallula. Thirteen were collected in the vicinity of McNary Dam (RM 292) with the remaining seven from further upriver.

- Core MA was collected near the mouth of the Walla Walla River (RM 315). Core MB was collected in the vicinity of Port Kelley (RM 312).

- Two cores (MC and MD) were collected from the Washington and Oregon shores, respectively.

- Three sediment cores were collected in the vicinity of Hat Rock State Park (RM 299). Core MD-mid channel and MD-north shore and MD-south shore were collected from the deep lake sediments.

As presented in Table 4-9, results for the majority of the analyses in River Section II are summarized as follows:

- VOCs – 42 analyses for VOCs
- SVOCs – 21 analyses for SVOCs

- Metals – 225 analyses for metals
- Pest/PCBs – more than 119 analyses for pesticides/PCBs
- Radionuclides – more than 1,200 analyses for radionuclides.

These data were primarily used to evaluate potential Hanford Site contaminants, primarily radionuclides in deep sediments. See Section 4.2 for a discussion of how these core data were used to identify the Primary Study Area.

4.1.4.3 Sediment Cores - River Section III. Nineteen sediment cores were collected from River Section III (Figure 4-7). These cores were collected from behind the three dams (John Day, The Dalles, and Bonneville Dams) in this river section and from the estuary near the mouth of the Columbia River. From 1976 to 2001, there were there were over 2,870 sediment core analyses for River Section III, with 2,273 reported above the PQL and approximately 600 reported as non-detects.

- John Day Dam – Core JD-A was collected from behind John Day Dam.

- The Dalles Dam – Three cores (D-A, D-B, and D-C) were collected from behind The Dalles Dam.

- Bonneville Dam - Three cores (B-A, M-E-1, and M-E-2) were collected from behind Bonneville Dam.

- Estuary – The remaining 11 sediment cores were collected from the estuary.

As presented in Table 4-10 results for the majority of the analyses in River Section III are summarized as follows:

- VOCs – 125 analyses for VOCs
- SVOCs – 114 analyses for SVOCs
- Metals – more than 1,320 analyses for metals
- Pest/PCBs – more than 280 analyses for pesticides/PCBs
- Radionuclides – more than 700 analyses for radionuclides.

These data were primarily used to evaluate potential Hanford Site contaminants, primarily radionuclides in deep sediments. See Section 4.2 for a discussion of how this core data was used to determine the Primary Study Area.

4.1.4.4 Conclusions. Based on the analysis of the spatial and temporal distribution of sediment cores, there may be a need to obtain additional cores within Lake Wallula deep sediments to confirm current radionuclide concentrations. However, existing downriver data appear to be sufficient to meet current Data Gap Analysis requirements, assuming that based on the outcome of the 100/300 Area RCBRA near-Hanford Site exposure points do not create an unacceptable risk.

4.1.4.5 Lake Wallula Sediment Seismic Survey. Prior to a 1976 sediment core sampling event, Battelle Pacific Northwest Laboratories conducted a seismic survey of Lake Wallula. The purpose was to identify areas of fine-grained sediments (silts and sands) suitable for coring. Numerous transects were completed from the ”Narrows” at RM 318 to McNary Dam at RM 292. A total of four 42 km (26-mi) traverses were completed parallel to the river channel, with a total

of nine transects completed perpendicular to the river channel axis (BNWL-2305). This information was used to develop an understanding of the volume and distribution of fine-grained sediments within Lake Wallula. The technique used a seismic acoustical transmitter pulled by a boat. The transmitter generated an acoustic pulse that traveled through the water column and penetrated subaqueous sediments. A bathymetric/seismic recorder was used to receive and record the data, which were interpreted to identify silt and sand deposits along the lake bottom.

The 1977 seismic report concludes (BNWL-2305) that fine-grained sediment deposits were located adjacent to the Oregon shoreline between RM 318 and McNary Dam (RM 292). These sediments are located on the low-angle slopes adjacent to the shoreline and generally do not extend to the central river channel.

4.2 IDENTIFICATION OF PRIMARY STUDY AREA

Because of the large number of sampling locations and analytes within the Study Area, a refined area of study (i.e., the Primary Study Area) was selected for this Data Gap Analysis. As described in Section 2.0, the Primary Study Area was identified by reviewing the existing data set, comparing the dam construction timeline to the documented discharge of Hanford Site-related contaminants to the Columbia River, and considering other historical information. This Primary Study Area begins at the Vernita Bridge and extends downriver, including the Hanford Reach and its contaminant source areas to the point where Hanford Site-related contaminants no longer pose a significant risk to human health or the environment (i.e., McNary Dam).

Based on this evaluation and the results of the 100/300 Area RCBRA, a phased approach to identify the Primary Study Area was employed. This approach includes the following six phases:

- Phase I – Compare dam construction, radionuclide release timeline, and sedimentation deposition.
- Phase II – Review conclusions from previous studies.
- Phase III – Normalize historical radionuclide sediment data to 2007 inventories.
- Phase IV – Compare relative inventories behind each dam.
- Phase V – Compare normalized inventories to risk-screening criteria.
- Phase VI – Identify Primary Study Area.

This approach assumed that the highest concentration of radionuclides would reside behind the dam that was the nearest downstream during the time when the concentrations of radioactive material released to the Columbia River was greatest. Radionuclide sediment data were reviewed from above Priest Rapids Dam to Astoria, Oregon (river mouth). The location of the maximum concentrations for Hanford Site-related radionuclide elements in sediments was identified. These data were normalized by half-life decay calculations to 2007 concentrations. Sediment results were then compared to both applicable human health criteria and ecological benchmarks. If the sediments in depositional area(s) closest to the source area(s) do not

exceed applicable screening criteria, then it is assumed that downstream depositional areas have similar or lower concentrations and similar or lesser risk.

4.2.1 Phase I – Dam Construction Versus Radionuclide Release and Sediment Deposition

Of the 11 major dams constructed along the main channel of the Columbia River, only 2 dams (the Bonneville and Grand Coulee Dams) were in place when the first single-pass reactor (105-B Reactor) came online in September 1944. The Bonneville Dam was constructed downstream of the Hanford Site near Hood River, Oregon, in 1937. The Grand Coulee Dam was completed in 1941, upstream of the Hanford Site, creating Lake Roosevelt. Table 4-11 provides a summary of the Columbia River dam construction dates in proximity to the Hanford Site and directly downstream, and Figure 4-1 shows the locations of these dams. Three additional dams began construction downstream of the Hanford Site after operations began: McNary Dam in the late 1940s, The Dalles Dam in early 1950s, and John Day Dam in late 1950s. Dams along the Columbia River were constructed for several purposes including flood control, water for irrigation, and electrical power generation. The net results have been a control of the river from its headwaters in Canada to the mouth and have resulted in "new" depositional areas behind each of these dams. Table 4-12 provides a summary of the time that the Hanford Site single-pass cooling water reactors were in production.

Several studies have been completed to sample and monitor radionuclide inventories behind each dam. Key studies included HW-83614, BNWL-2305, and PNWD-2227.

The highest production of plutonium at the Hanford Site occurred when construction of McNary Dam was completed. Figure 4-8 shows the total annual production of plutonium at the Hanford Site from 1947 until 1986. As shown in this figure, the highest production of plutonium at the Hanford Site occurred between 1954 and 1970, ranging between approximately 1,000 and 4,700 kg/yr. Prior to 1954, when plutonium production at the Hanford Site was minimal, sediment deposition downstream of the Hanford Site occurred primarily at Bonneville Dam, which was constructed between 1935 and 1937. However, subsequent to McNary Dam construction in 1954, sediments began to accumulate behind the dam just as plutonium production began to increase. This analysis suggests that the highest concentration of radionuclides in sediments likely resides behind McNary Dam.

Figure 4-9 shows the annual releases (in curies/year) of five key radionuclides into the Columbia River between 1944 and 1971 (PNWD-2227). As shown in this figure, the greatest concentrations of these radionuclides were released to the river in the mid-1950s to mid-1960s. Although these five short-lived radionuclides would be decayed years ago, the years of their peak release (which coincides with the years of peak plutonium production) indicate the years of greatest reactor activity. Construction of McNary Dam, the first dam located directly downriver of the Hanford Site, began in 1947, before the years of peak radionuclide releases. Therefore, the radionuclides entering the river during these years of peak releases would have been deposited in the sediment behind this dam.

As described in Section 3.0 of this report, sediment transport is directly related to river discharge. The majority of sediment transport in the river occurs in May, June, and July when the flow is relatively high. Table 4-13 provides a summary of average flow, suspended solids, and estimated suspended sediment load for the Columbia River (at Priest Rapids Dam), Snake River, and Yakima River at their respective confluences with the Columbia River.

At Priest Rapids Dam, located upstream of the Hanford Site, the Columbia River's average annual flow is 3,327 m^3/sec (117,480 ft^3/sec), which is significantly higher than both the Snake River and Yakima River average annual flows. Although the annual flow is greater at Priest Rapids, the amount of suspended solids in this section of the Columbia River is significantly lower than the Snake and Yakima Rivers. Therefore, the majority of suspended solids and sediment load being deposited in Lake Wallula behind McNary Dam is originating from the Snake and Yakima Rivers.

Since the last single-pass reactor shut down in 1971, “clean” sediments primarily from the Snake and Yakima Rivers have been deposited over contaminated sediments that originated from the Hanford Site, and the radionuclides have been effectively ”capped in place,” as supported by recent sediment sampling results (PNNL-15222, PNNL-15892). The future fate of the radionuclides in Columbia River sediments (assuming no new additions) will be a continuing deeper burial by relatively uncontaminated new sediment deposits (BNWL-2305).

4.2.2 Phase II – Conclusions from Previous Studies

As discussed in Section 2.0, more than 200 primary studies have been completed over the past 60 years relating to the Hanford Site discharges to the Columbia River and the effects on surface water and sediments. The five reports highlighted below evaluated radionuclide inventories downstream of the Hanford Site.

1. HW-83614, *Progress in Studies of Radionuclides in Columbia River Sediments: A Summary of Hanford Achievements in this Program under General Electric, 1963-1964.*

2. BNWL-2305, *Association of Hanford Origin Radionuclides with Columbia River Sediment.*

3. WDOH 1994, *Special Report: Radioactivity in Columbia River Sediments and Their Health Effects.*

4. WDOH 2005, *Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003.*

5. OHD 1994, *Environmental Radiological Surveillance Report on Oregon Surface Waters, 1961 – 1993, Volume I.*

Each study concluded that the highest concentration of radionuclides resides in the sediments behind McNary Dam. The following provides a summary of each of the reports and the findings.

HW-83614 – In 1963 and 1964, a study was conducted on the behavior of Hanford Site-produced radionuclides in the Columbia River and their relation to both suspended and deposited sediments. Prior to this study, it had been observed that radionuclide depletion had occurred between the Hanford Site reactors and Vancouver, Washington, indicating that sediments may sorb and retain the radionuclides. Therefore, part of this study involved an inventory of radionuclides in the river bottom sediment. Measurements taken of river bottom materials indicate that "extensive 'permanent' sedimentation occurs only in the reservoir of the McNary Dam and in the estuary." In addition, the relatively higher radionuclide concentrations at McNary Dam and the deep sediment deposits indicate that the dam is "the major depositional area" (HW-83614).

BNWL-2305 – During a 1976 study, deep sea piston coring techniques were used to penetrate the deepest sediment deposits behind McNary Dam in order to measure the radionuclide concentrations and distributions in the deepest sediment in the Columbia River, downstream of the Hanford Site. This study allowed for an approximation of the total inventory of radionuclides in the sediment behind McNary Dam, which "has been shown during this and earlier studies to be the major reservoir of residual Hanford origin radionuclides in the Columbia River system" (BNWL-2305).

WDOH (1994) – A 1994 report was prepared by the Washington State Department of Health which addressed the health effects of artificial radioactivity in Columbia River sediments. During the study, the highest concentrations of radioisotopes (cobalt-60, cesium-137, europium-152/154, plutonium-239/240, and americium-241) were found in McNary sediments. The maximum concentrations observed in dams downstream of McNary were typically about 50% or less of the McNary maximum concentrations (WDOH 1994).

WDOH (2005) – In 2003, the Washington agencies and Ecology agreed to conduct a multi-agency cooperative environmental surveillance study of four pools located downstream of the Hanford Site, including McNary Dam, John Day Dam, The Dalles Lock and Dam, and Bonneville Dam. Results from the study were compared to background values from sediment and water samples collected from the pool upstream of Priest Rapids Dam (upstream of the Hanford Site). Data indicated that the concentrations of most radionuclides in the lower Columbia River sediment were similar to background values measured upstream of the Hanford Site (WDOH 2005).

OHD (1994) – The Oregon Health Division published the *Environmental Radiological Surveillance Report on Oregon Surface Waters 1961 – 1993* in December 1994. This report documents the impact of worldwide atmospheric nuclear weapons testing and Hanford Site discharges on the Columbia River. Radioactivity in Oregon surface waters originates from both artificial and natural sources. The Hanford Site was a major source of chromium-51, zinc-65, and phosphorus-32 in the 1960s and 1970s. In general, the concentrations of radioactive material in the Columbia River from Hanford Site operations were directly related to the distance from the site. By 1993, no Hanford Site-related radionuclides were "detectable in the Columbia River or the Oregon seacoast." In 1993, levels in the lower Columbia River were similar to other Oregon surface water bodies not connected to the Hanford Site (OHD 1994).

4.2.3 Phase III – Normalize Radionuclide Sediment Data to 2007 Inventories

To best understand and present the results of past radionuclide sampling, it is helpful to present the data as "decayed" or normalized. Because radionuclides decay over time, the data presented below have been corrected or decayed to 2007 inventories.

Radionuclides with short half-lives have decayed to insignificant levels since the time of sample collection (approximately 30 years). All radionuclide results for sediment were decayed to 2007 to reflect current activity levels. The fraction of activity remaining after approximately 30 years of decay was calculated using the following equation:

$$A_r = A_0 e^{-\lambda t}$$

where:

A_0 = activity at year of sample collection

A_r = remaining activity (fraction of original amount)
λ = radioactive decay constant
t = elapsed time since time of collection.

To illustrate the overall affect of decay on the total estimated inventory, Figure 4-10 is the total inventory as estimated by BNWL-2305, while Figure 4-11 shows the total remaining inventory in 2007. The total reduction in the inventory from 1976 to 2007 is approximately 95%. As shown in these figures, there has been a significant reduction in the key Hanford Site-related radionuclides:

- Iron-55 had over 99% reductions with only 0.04% remaining in 2007
- Cobalt-60 had over 98% reductions with only 1.8% remaining
- Thorium-228 had over 99% reductions with only 0.002% remaining
- Europium-152/154 had a net reduction of approximately 80%
- Cesium-137 had over a 49% reduction.

However, the following isotopes with longer half-lives did not show as dramatic reductions:

- Plutonium-239/240 had less than a 1% reduction
- Plutonium-238 experienced a 21% reduction
- Americium-241 had less than 5% reduction.

To put the current inventories in perspective, these results are compared to human health and ecological screening criteria (see Section 4.2.5).

4.2.4 Phase IV – Compare Relative Concentrations

To further explore the effectiveness of contaminated sediment deposition or retention behind McNary Dam, the relative decayed concentrations of key radionuclides (cobalt-60, plutonium-239/240, and cesium-137) from the four downstream dams (McNary, John Day, The Dalles, and Bonneville) were compared. A comparison with sediment collected from upriver of the Hanford Site was used to identify background conditions.

Normalized (or decayed) data were compared to average background concentrations, calculated as the geometric mean, from the sediment samples located upstream of Vernita Bridge (see View A, Appendix C). The Vernita Bridge is located approximately 14 km (9 mi) downstream of Priest Rapids and approximately 6 km (4 mi) upstream of the 100-B/C Reactor Area. Average background concentrations for cobalt-60, cesium-137, and plutonium-239/240 were 0.0054, 0.597, and 0.0093 pCi/g, respectively.

Cobalt-60 – Cobalt-60 is a known byproduct of plutonium production at the Hanford Site facility and is considered a Hanford Site contaminant. It has a half-life of 5.3 years. Both the 1975 data and 2007 normalized data were used in the cobalt-60 comparison to illustrate the effects of nuclear decay on the current inventory. The 1975 sediment concentrations for cobalt-60 exceeded background levels at the following dams: McNary, John Day, The Dalles, and Bonneville. Cobalt-60 concentrations (undecayed) at Priest Rapids Dam, located upgradient of the Hanford Site, were below the background concentration of 0.0054 pCi/g (Figure 4-12). In general, cobalt-60 concentrations, except at Priest Rapids Dam, increased with sediment depth. The highest concentration (undecayed) was detected at McNary Dam, with a concentration of 0.37 pCi/g. The cobalt-60 sediment concentrations decayed to 2007 were all below the

background level of 0.0054 pCi/g, with the exception of one sample from McNary Dam with a detected concentration of 0.0055 pCi/g, which was slightly above the background sediment concentration (Figure 4-13).

Cesium-137 – Cesium-137 is present throughout the world as the result of atmospheric atomic weapons testing conducted in the 1950s, 1960s, and 1970s, and its occurrence in sediment is not exclusively Hanford Site related. Cesium-137 has a half-life of 30 years. Surface sediment concentrations (decayed to 2007) for cesium-137 were above the background level of 0.597 pCi/g in all the dams (Figure 4-14). Cesium-137 was detected upgradient of the Hanford Site, at Priest Rapids Dam, at concentrations up to 1.08 pCi/g. The presence of cesium-137 above background concentrations upgradient of the Hanford Site may be the result of fallout. The highest decayed cesium-137 concentration at McNary Dam was 1.58 pCi/g.

Plutonium-239/240 - Plutonium-239/240 are directly related to Hanford Site production. Plutonium-239/240 sediment concentrations (decayed to 2007) were compared to the background sediment concentration of 0.0093 pCi/g at the following dams: Priest Rapids, McNary, The Dalles, and Bonneville. In general, decayed values of plutonium-239/240 were slightly above the background concentration in sediments at all the dams (Figure 4-15). The highest decayed plutonium-239/240 sediment concentrations at Bonneville Dam and McNary Dam were 0.095 pCi/g and 0.1 pCi/g, respectively.

4.2.5 Phase V – Compare Normalized Concentrations to Risk-Screening Criteria

Subsequent to normalizing the data by half-life decay calculations to 2007 concentrations, the sediment results were compared to Hanford Site-specific background concentrations, to human health criteria and ecological benchmarks, and to previous risk assessment results. To compare sediment concentrations, pCi/g is used, which is one millionth of one millionth of one curie per gram.

As described below, these comparisons to applicable criteria conclude that the sediments in the depositional area closest to the Hanford Site (i.e., McNary Dam) do not exceed applicable risk screening criteria. Furthermore, since downstream depositional areas have similar or lower concentrations of Hanford Site contaminants compared to the sediments behind McNary Dam, they pose a similar or lesser risk.

4.2.5.1 Human Health Criteria. Both the 1975 and decayed sediment concentrations for cobalt-60 were well below the human health criteria of 1.4 pCi/g. The highest concentrations were detected at McNary Dam at 0.37 pCi/g (1975; undecayed; Figure 4-12) and 0.00548 pCi/g (decayed to 2007), which are both below the human health criteria (Figure 4-16).

Cesium-137 concentrations were below the human health criteria of 6.2 pCi/g. The highest concentration was detected at McNary Dam at 1.58 pCi/g, which is well below the human health criteria (Figure 4-17).

Plutonium-239/240 concentrations were below the human health criteria of 33.9 pCi/g. The highest concentration was detected at McNary Dam at 0.1 pCi/g, which is well below the human health criteria (Figure 4-18).

For all three compounds, the highest detections were found at McNary Dam at concentrations well below the human health criteria. This comparison concludes that sediments in the

depositional area closest to the Hanford Site do not exceed applicable screening criteria. Furthermore, since downstream depositional areas have similar or lower concentrations of Hanford Site contaminants compared to the sediments behind McNary Dam, they pose a similar or lesser risk.

4.2.5.2 Ecological Benchmarks. Both the 1975 and decayed sediment concentrations for cobalt-60 were well below the ecological benchmark of 1,460 pCi/g. The highest concentrations were detected at McNary Dam at 0.37 pCi/g (1975; undecayed) and 0.0055 pCi/g (decayed to 2007), which are both below the ecological benchmark (Figure 4-19).

Cesium-137 concentrations were below the ecological benchmark of 3,120 pCi/g. The highest concentration was detected at McNary Dam at 1.58 pCi/g, which is well below the ecological benchmark (Figure 4-20).

Plutonium-239/240 concentrations were below the ecological benchmark of 5,860 pCi/g. The highest concentration was detected at McNary Dam at 0.1 pCi/g, which is well below the ecological benchmark (Figure 4-21).

For all three compounds, the highest detections were found at McNary Dam at concentrations well below the ecological benchmark. This comparison concludes that sediments in the depositional area closest to the Hanford Site do not exceed applicable ecological screening criteria. Furthermore, since downstream depositional areas have similar or lower concentrations of Hanford Site contaminants compared to the sediments behind McNary Dam, they pose a similar or less risk.

4.2.5.3 Previous Risk Assessments. The results presented above are similar to and supported by the human health risk assessment of contaminated sediments in the Columbia River conducted in 1994 by the Washington State Department of Health, titled *Radioactivity in Columbia River Sediments and Their Health Effects* (WDOH 1994). In this study, the health risks of radioactivity in river sediments from the Hanford Site to the Oregon and Washington coastlines were assessed. Concentrations of cobalt-60, cesium-137, and plutonium-239/240 from this 1994 study were slightly higher than the radionuclide results that were decayed through 2007 to reflect current activity levels. The primary conclusion of the Washington State Department of Health report was that the artificial radioactivity concentrations found in Columbia River sediments do not pose a significant human health risk (WDOH 1994). In 1994, Oregon Health Division published the *Environmental Radiological Surveillance Report on Oregon Surface Waters 1961 – 1993. T*his report concludes that the concentrations of radioactive material in the Columbia River from Hanford Site operations were directly related to the distance from the site. By 1993, no Hanford Site-related radionuclides were "detectable in the Columbia River or the Oregon seacoast" (OHD 1994). In 1993, levels in the lower Columbia River were similar to other Oregon surface water bodies not connected with the Hanford Site.

4.2.6 Phase VI – Identify Primary Study Area

Based on the existing data set for sediments along the entire Columbia River below the Hanford Site, including sediment cores, river hydrodynamics, history of radionuclide discharges to the river, dam construction timeline, interpretations and conclusions from previous studies, and normalized radionuclide inventories behind the four downstream dams, the Primary Study Area has been identified as the Columbia River between the Vernita Bridge and McNary Dam (i.e., River Section II). McNary Dam was chosen as the lower boundary of the Primary Study Area.

This is not only supported by the current evaluation, but is consistent with numerous studies that have demonstrated that the highest Hanford Site-related inventory is present behind McNary Dam. While the sediments behind McNary Dam contain the highest concentration of radionuclides, these sediments are covered with several feet of relatively ”clean” sediments, and the decayed concentrations do not pose a significant human health or ecological risk.

Figure 4-1. Sediment and Surface Water Sampling Locations – Priest Rapids to the Ocean.

(For a full size version of this figure please see the CD at the end of this document. If a printed version is needed please contact WCH Publications at (509) 372-9938.)

Figure 4-2. Number of Sediment Sample Locations by Year.

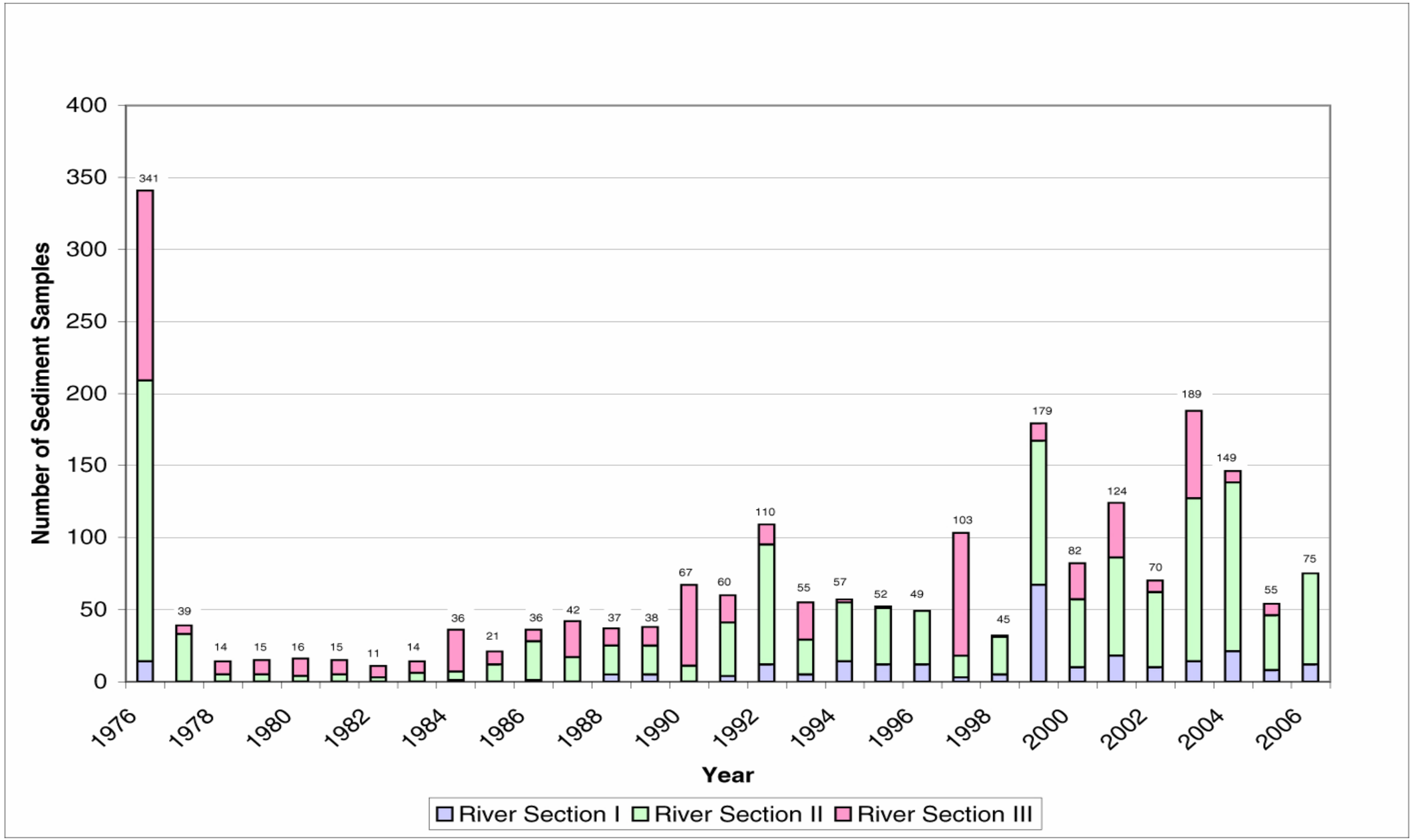


Figure 4-3. Number of Surface Water Sample Locations by Year.

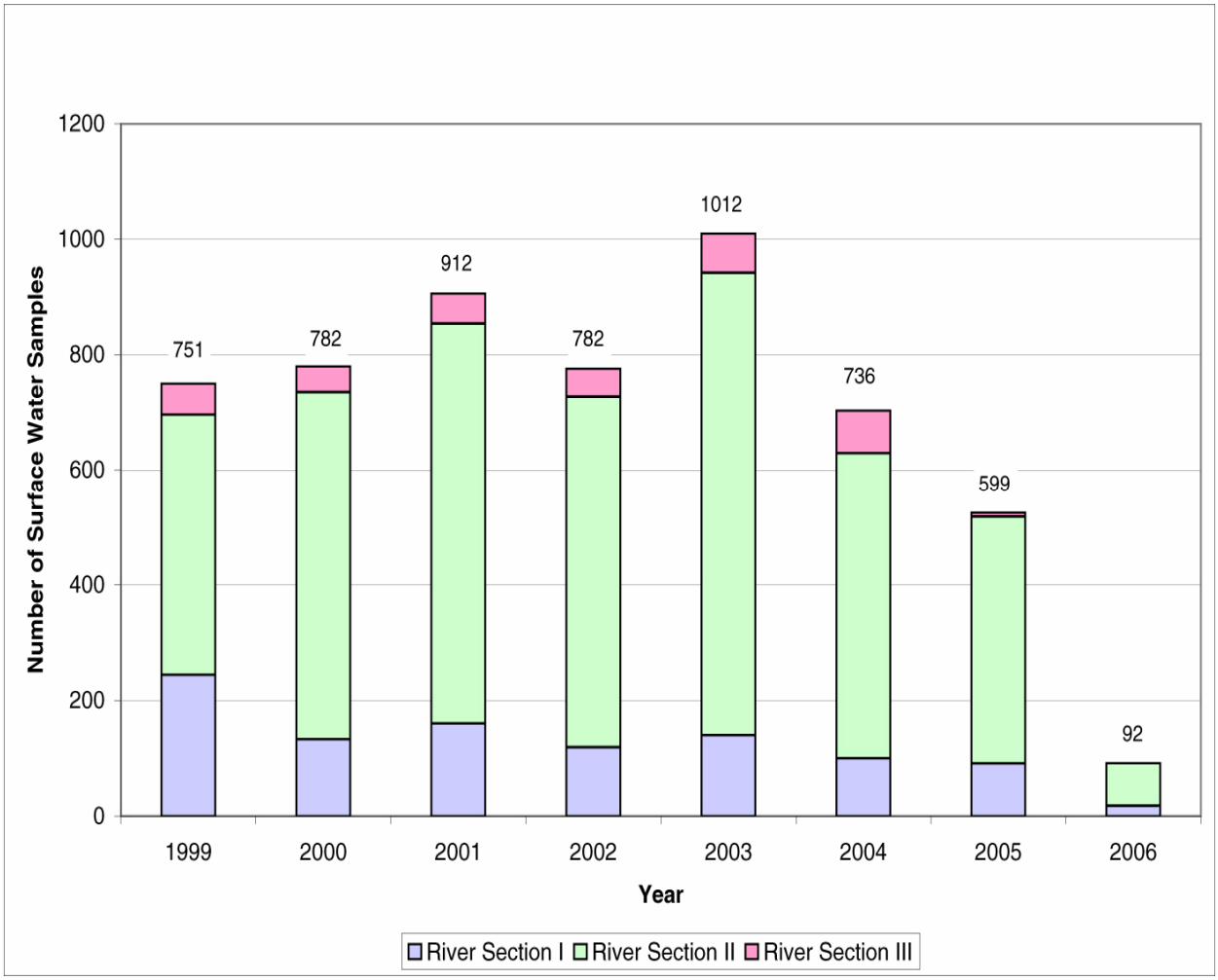


Figure 4-4. Sediment and Surface Water Sampling Locations – River Section I.

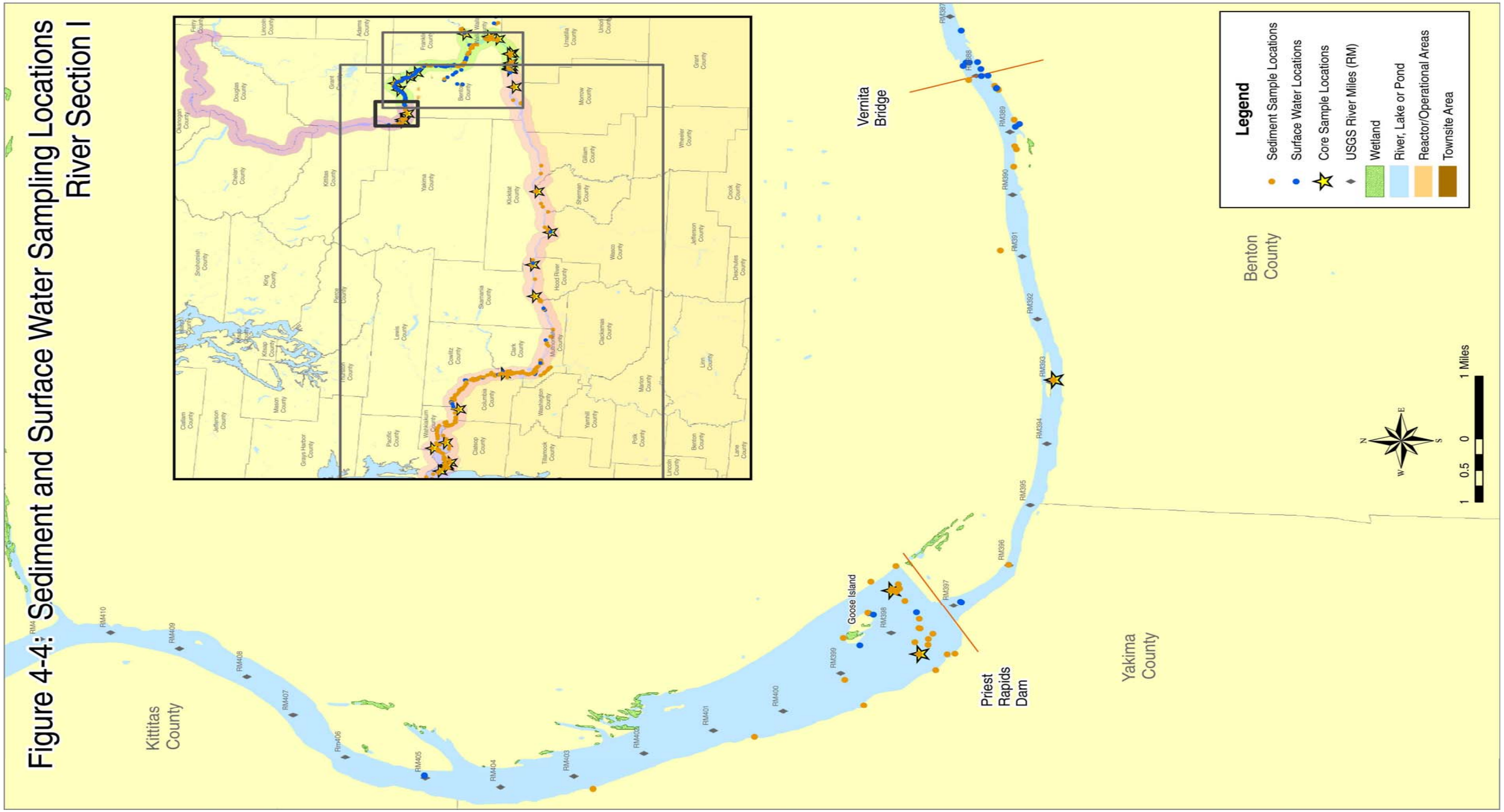


Figure 4-5. Sediment and Surface Water Sampling Locations - River Section II.

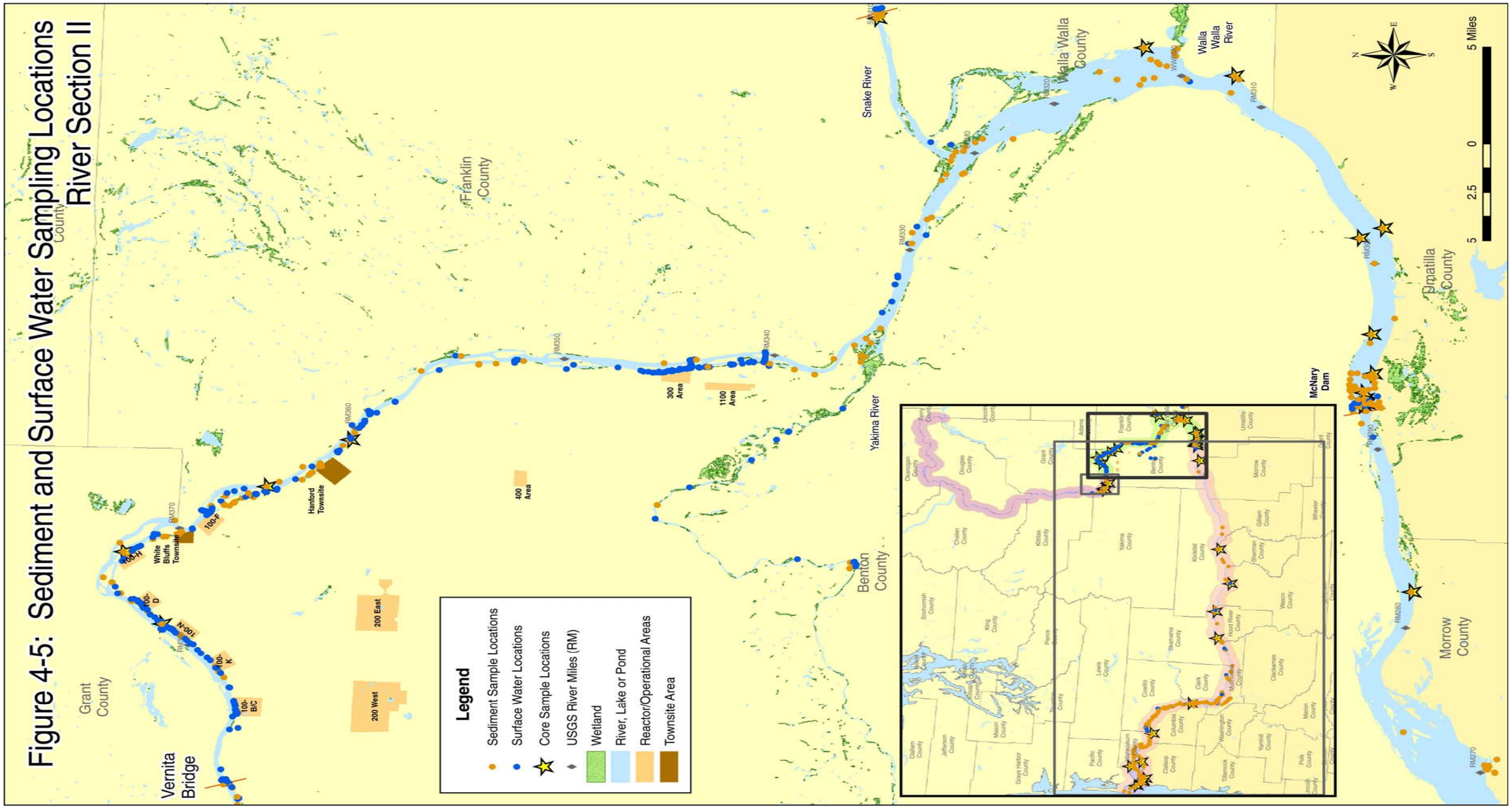


Figure 4-6. Sediment and Surface Water Sampling Locations - River Section III.

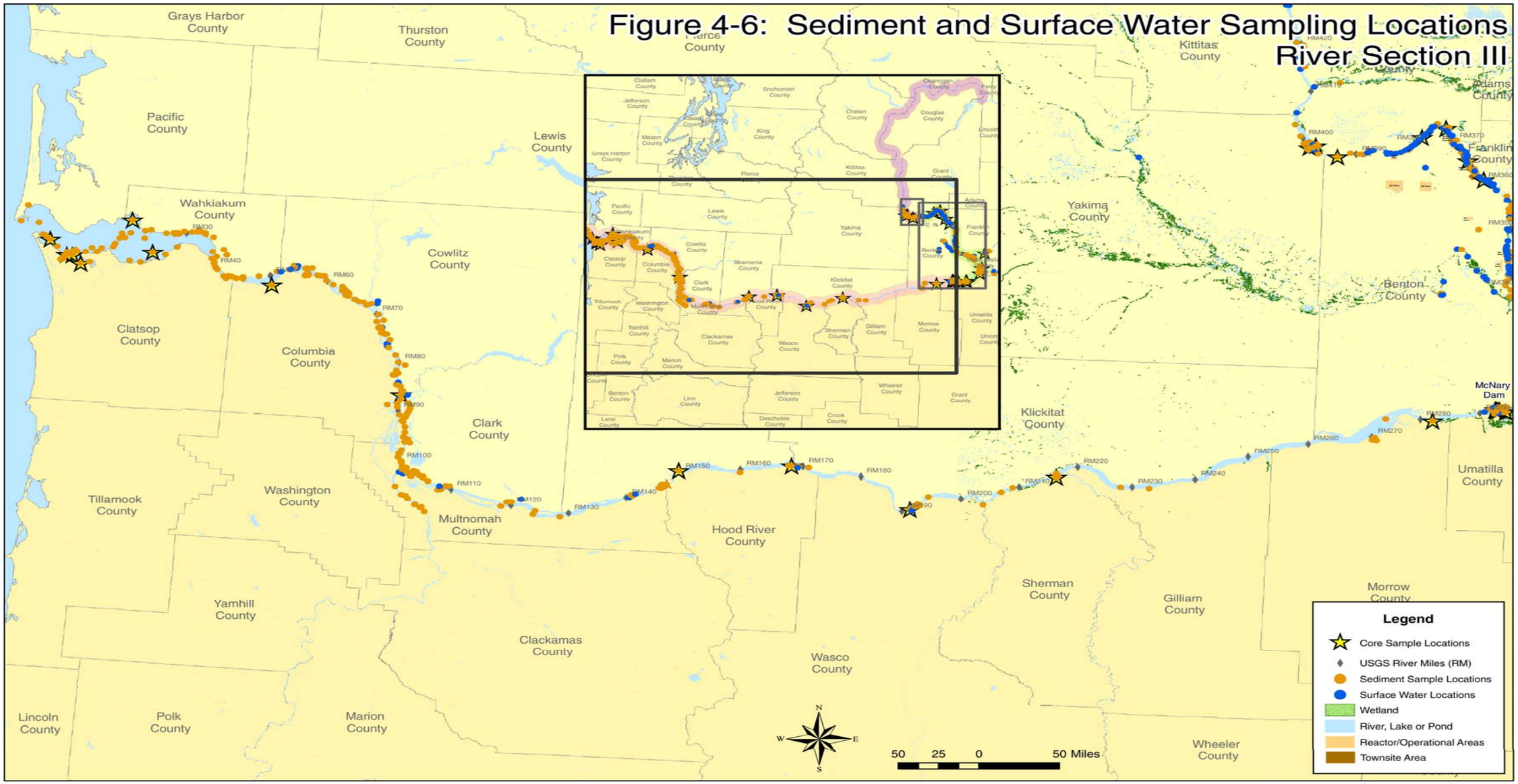


Figure 4-7. Sediment Core Sample Locations – Study Area.

(For a full size version of this figure please see the CD at the end of this document. If a printed version is needed please contact WCH Publications at (509) 372-9938.)

Figure 4-8. Total Annual Production of Plutonium at the Hanford Site.

Source: DOE/RL-97-1047

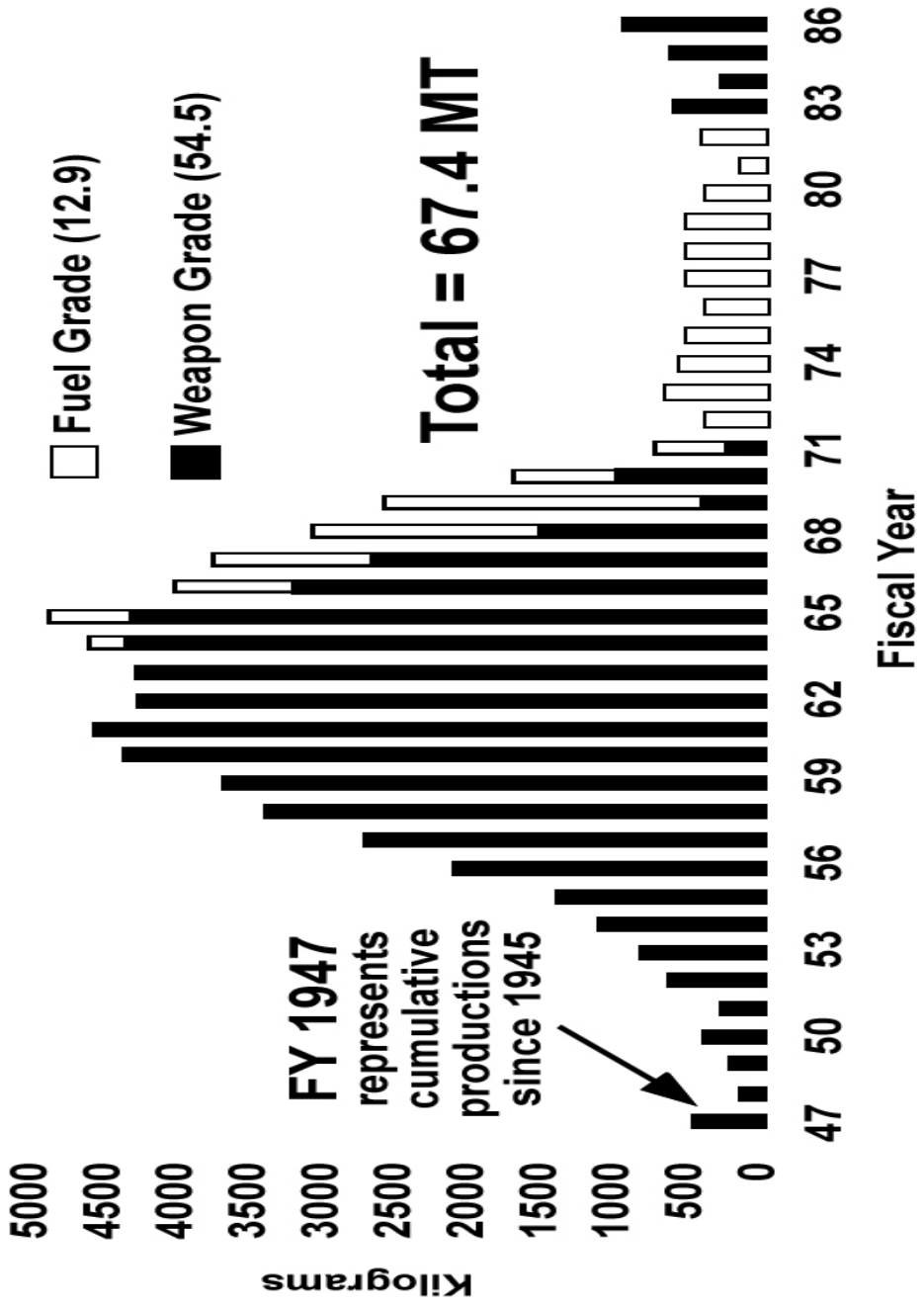


Figure 4-9. Key Radionuclides Released to the Columbia River by Year, 1944-1971.

(Source: PNWD-2227)

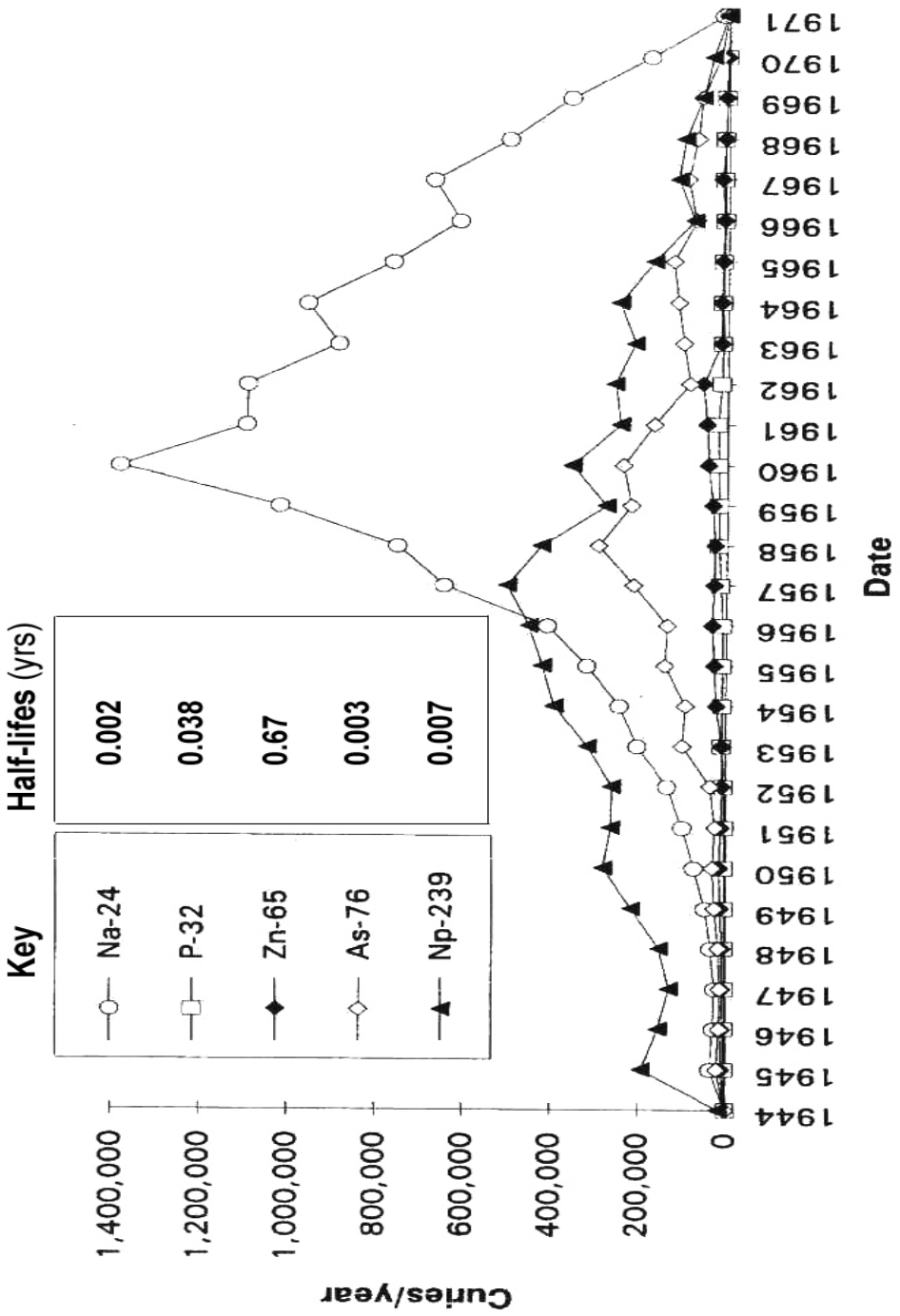


Figure 4-10. Estimated Concentrations of Radionuclides Behind McNary Dam as Sampled in 1976.

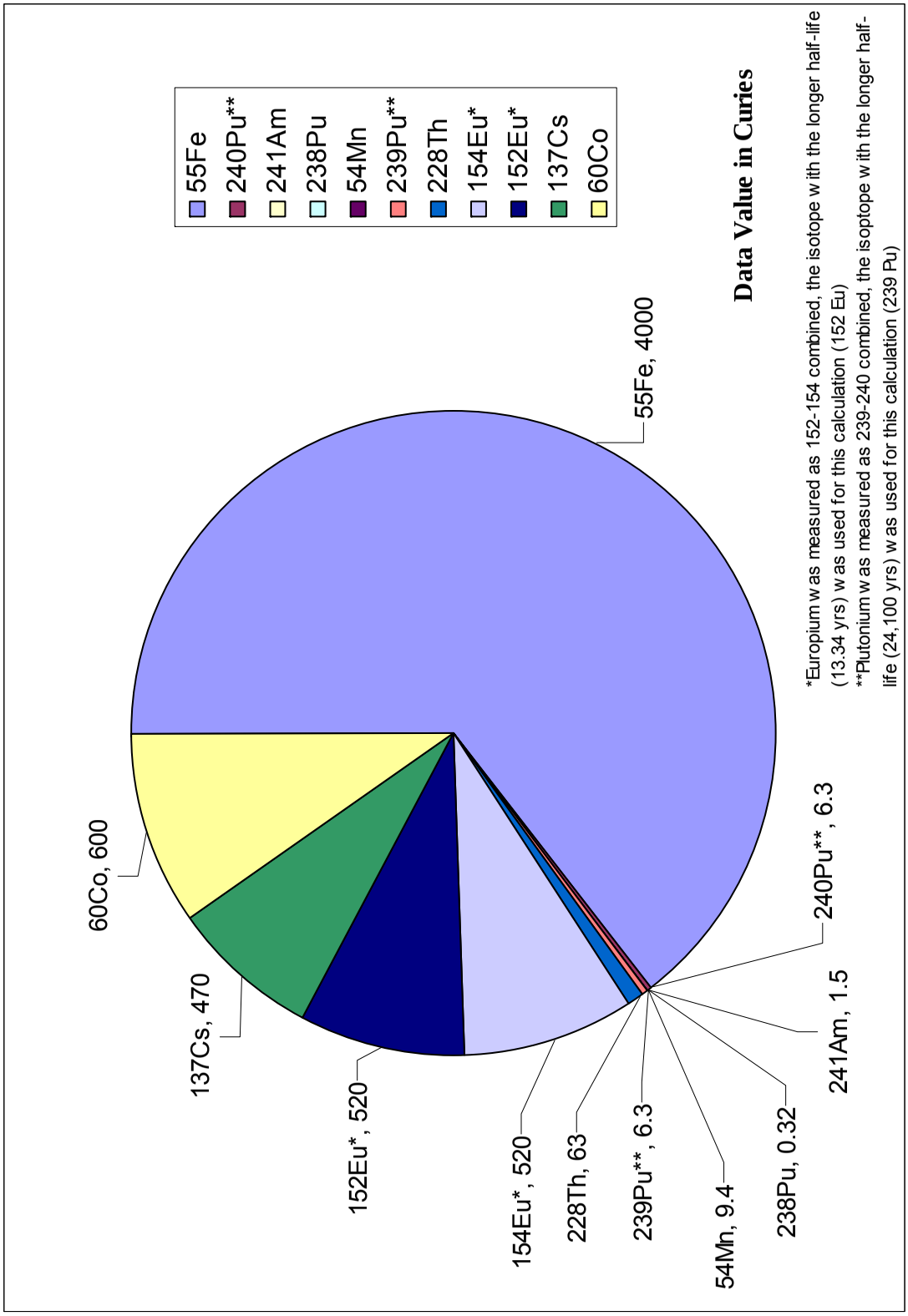


Figure 4-11. Percentage Radionuclides Remaining in 2007 after Half-Life Decay.

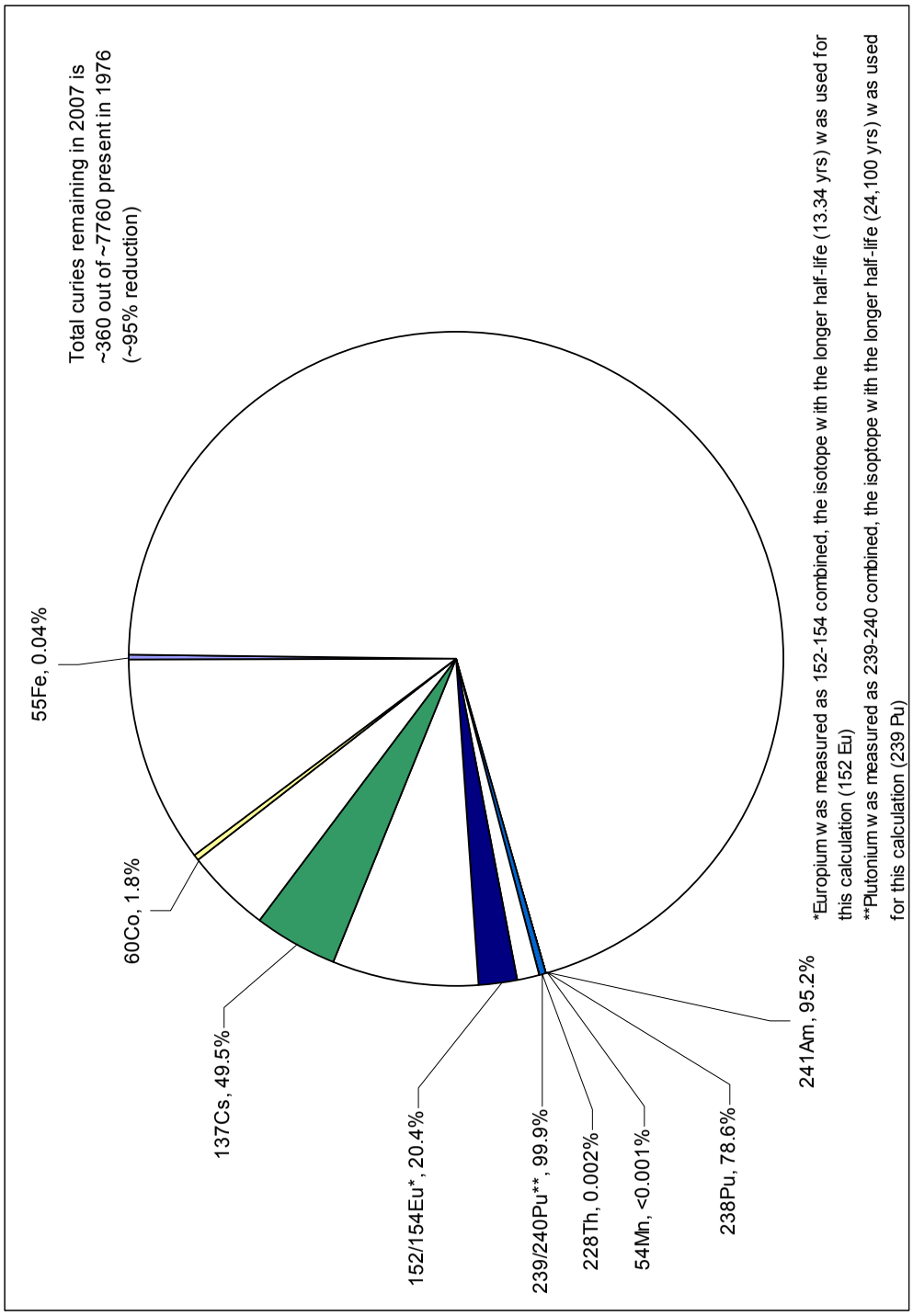


Figure 4-12. Cobalt-60 at Depth at Dams.

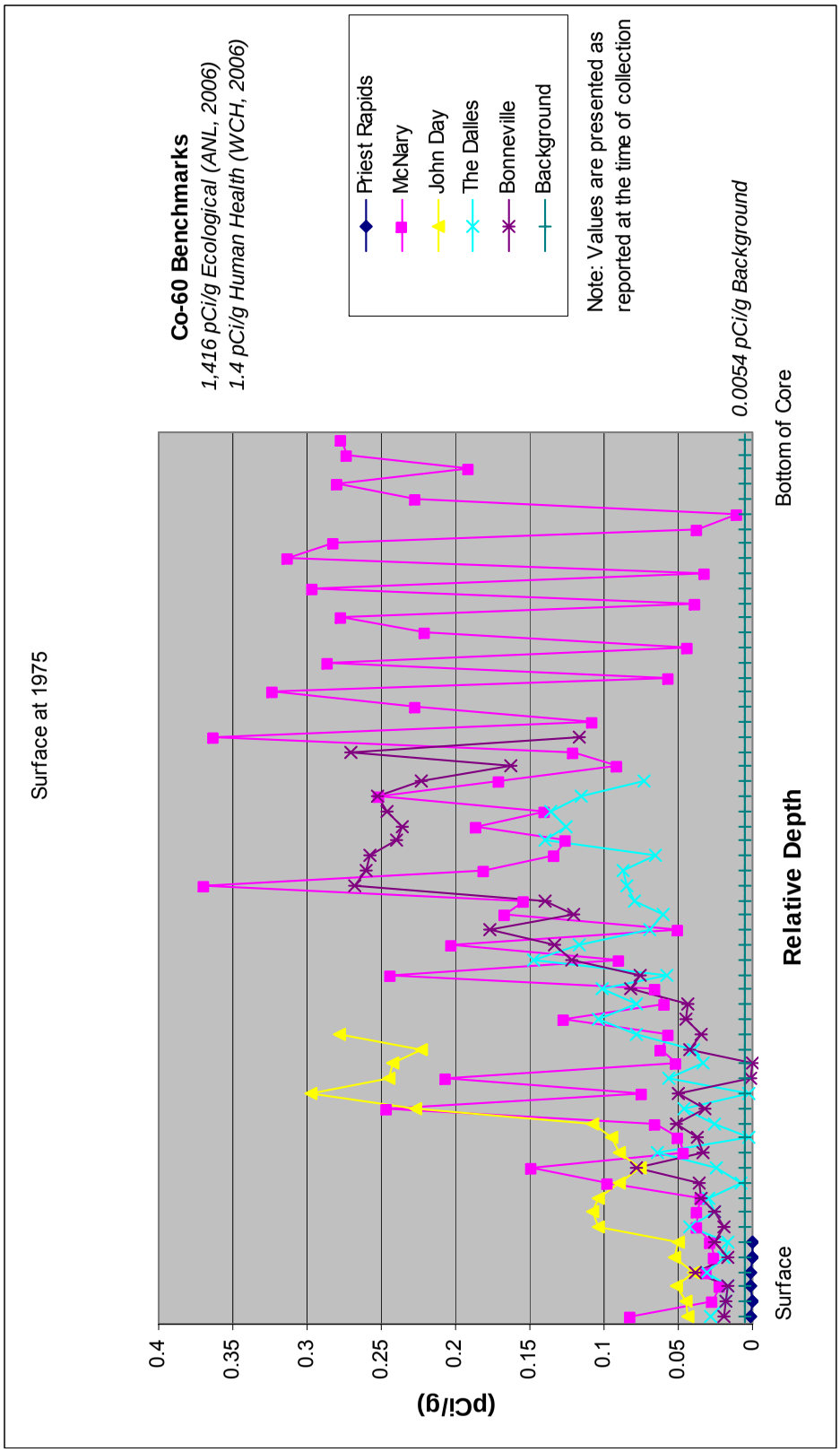


Figure 4-13. Cobalt-60 at Depth at Dams (Values Decayed to 2007).

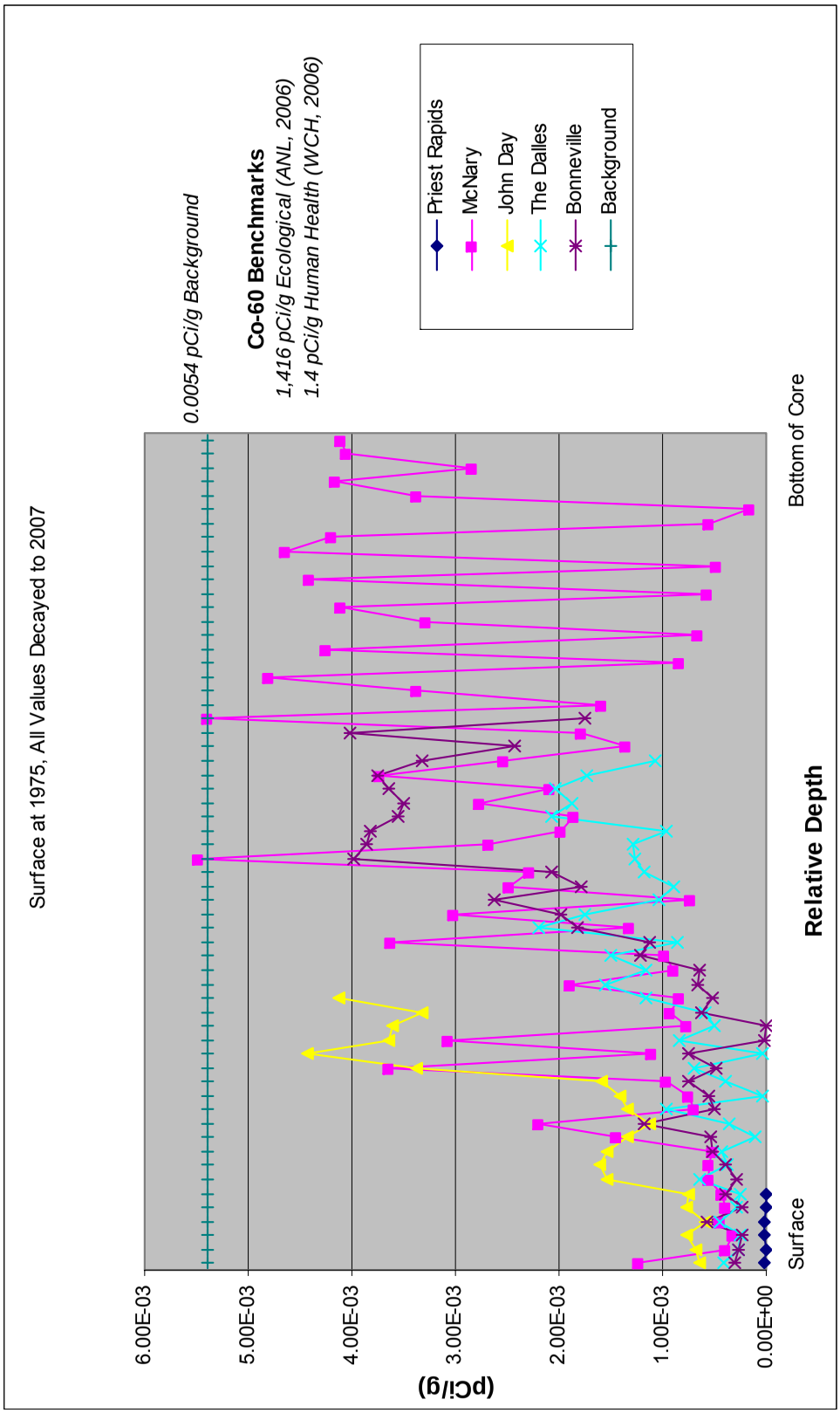


Figure 4-14. Cesium-137 by Depth at Dams (Values Decayed to 2007).

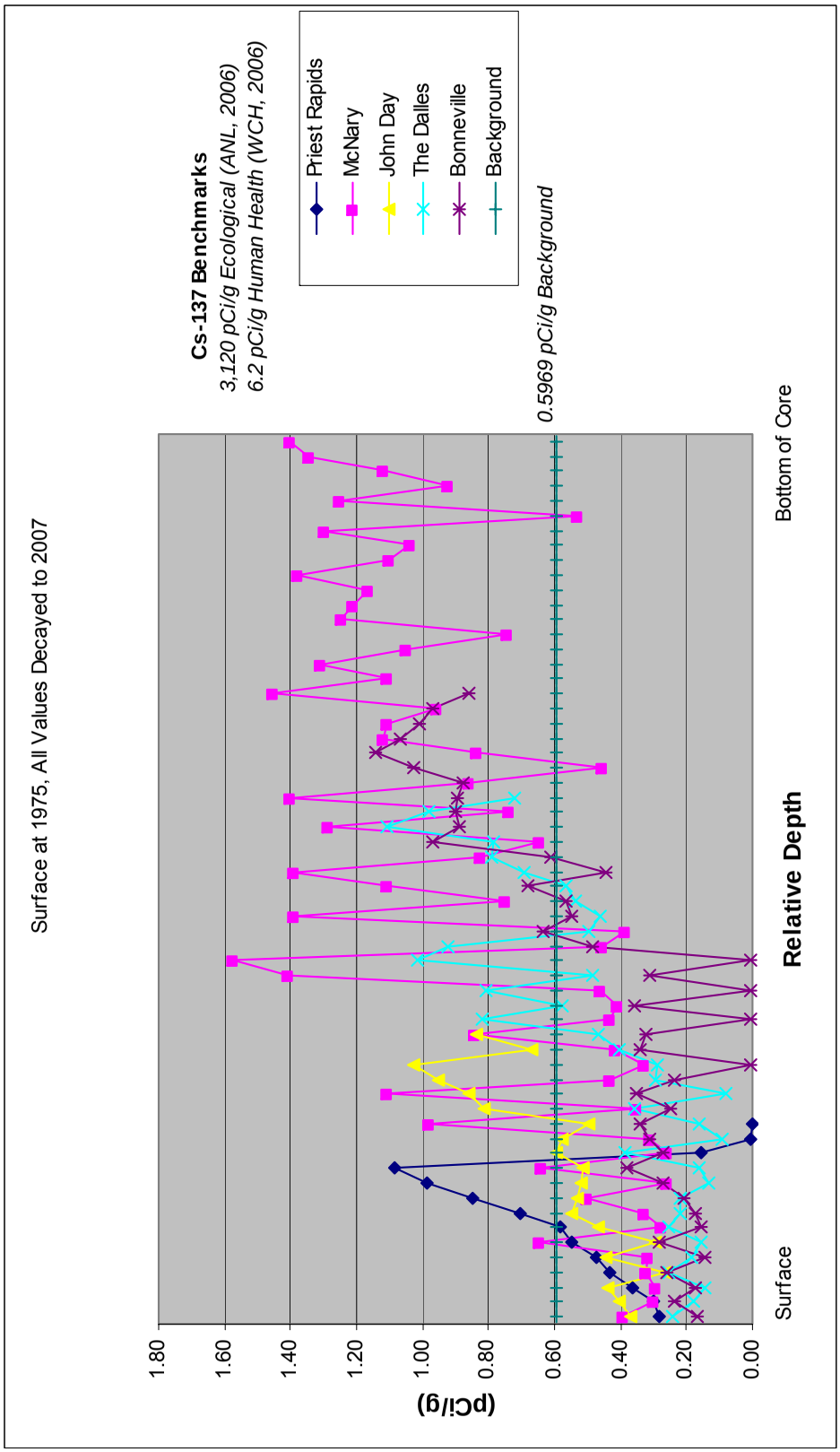


Figure 4-15. Plutonium-239/240 by Depth at Dams (Values Decayed to 2007).

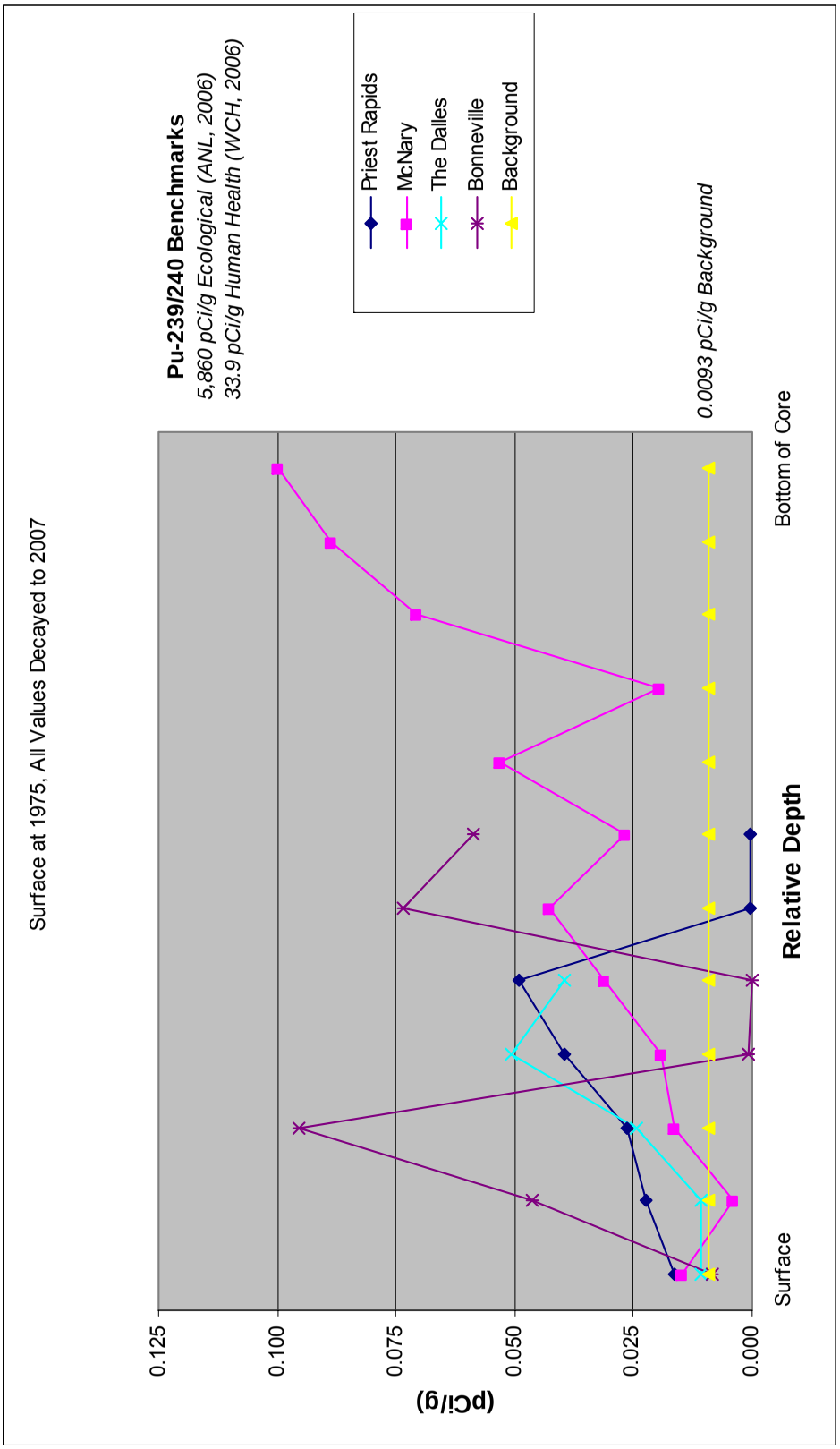


Figure 4-16. Maximum Radionuclide Concentrations Compared to Human Health Benchmark, Cobalt-60.

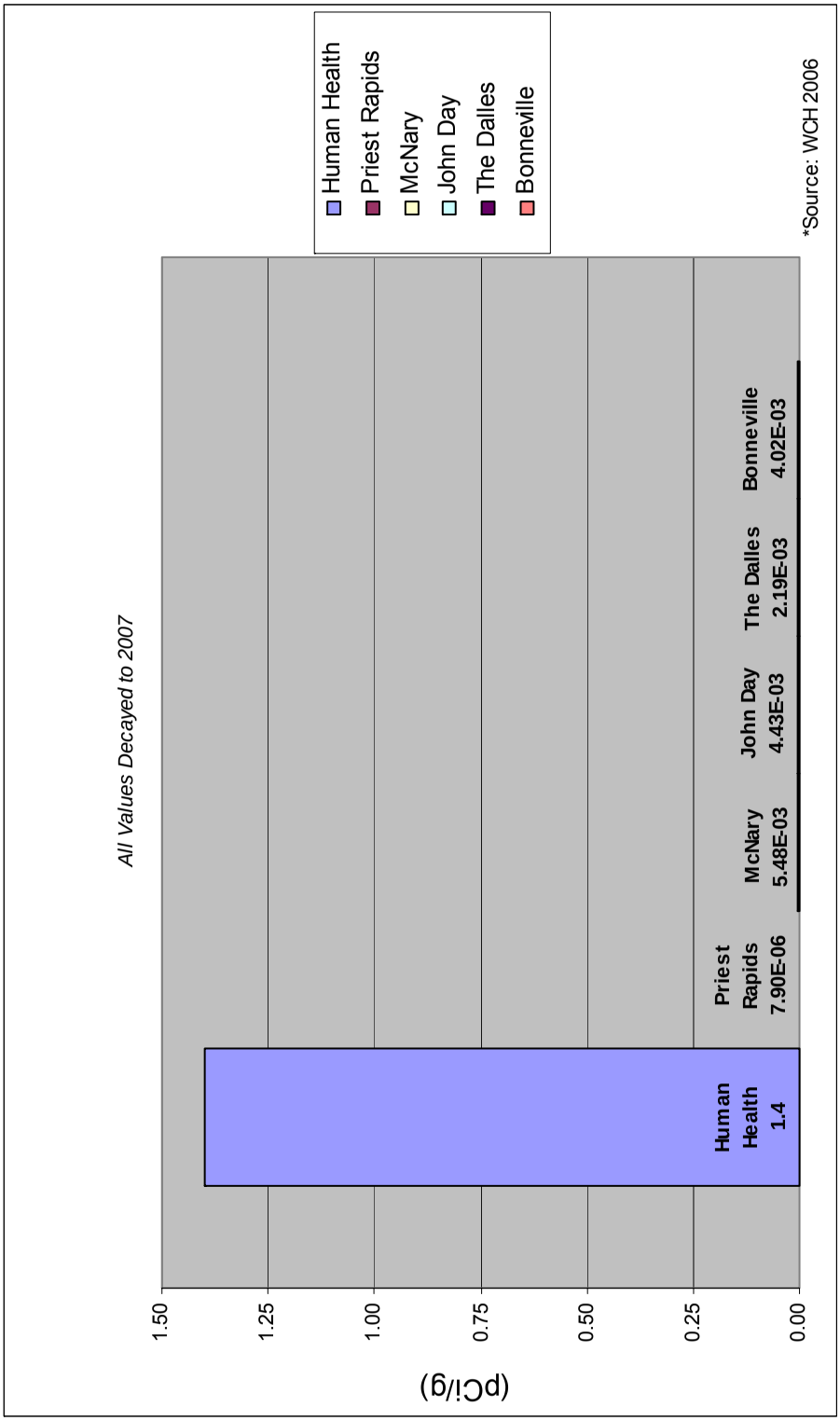


Figure 4-17. Maximum Radionuclide Concentrations Compared to Human Health Benchmark, Cesium-137.

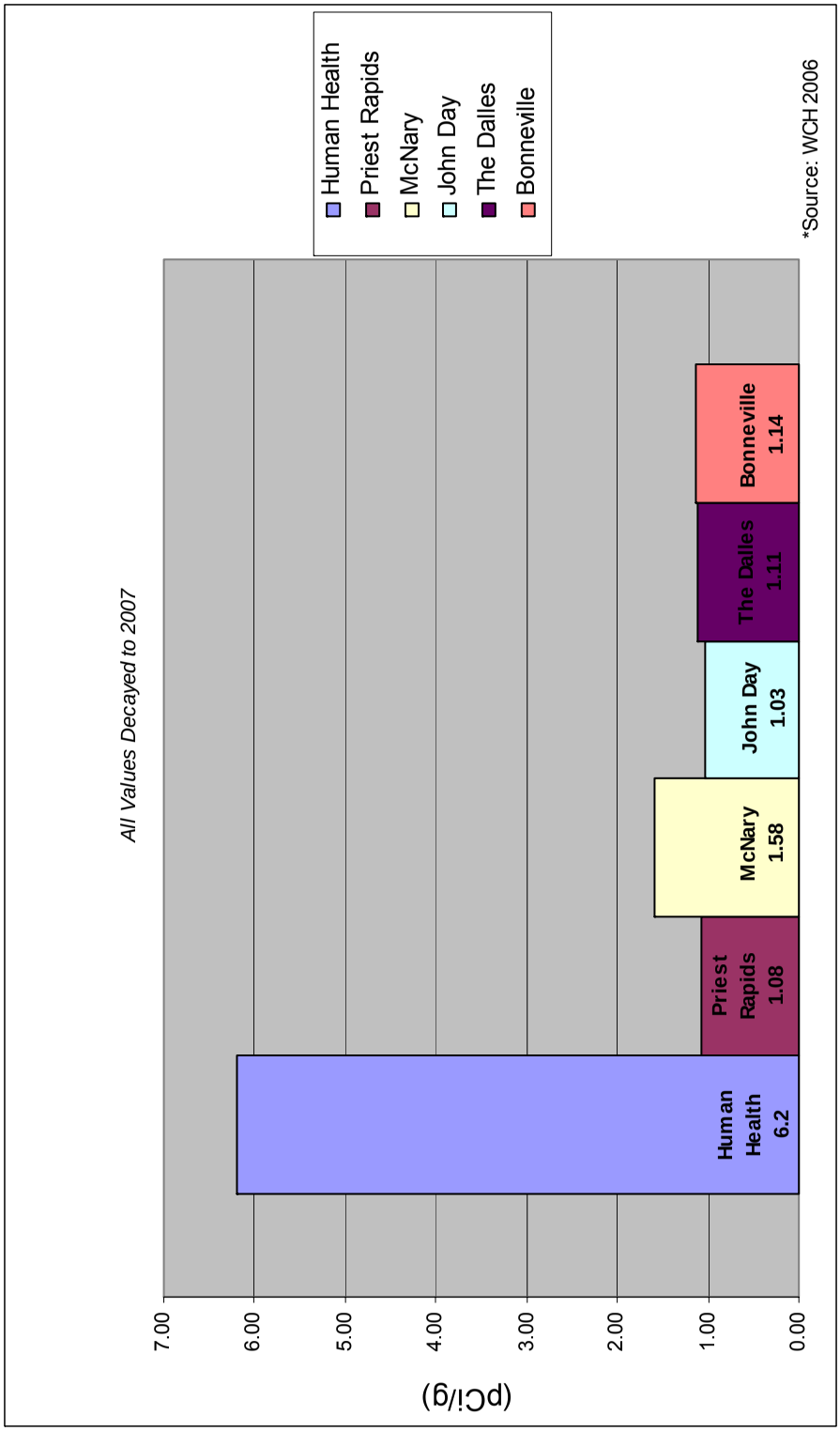


Figure 4-18. Maximum Radionuclide Concentrations Compared to Human Health Benchmark, Plutonium-239/240.

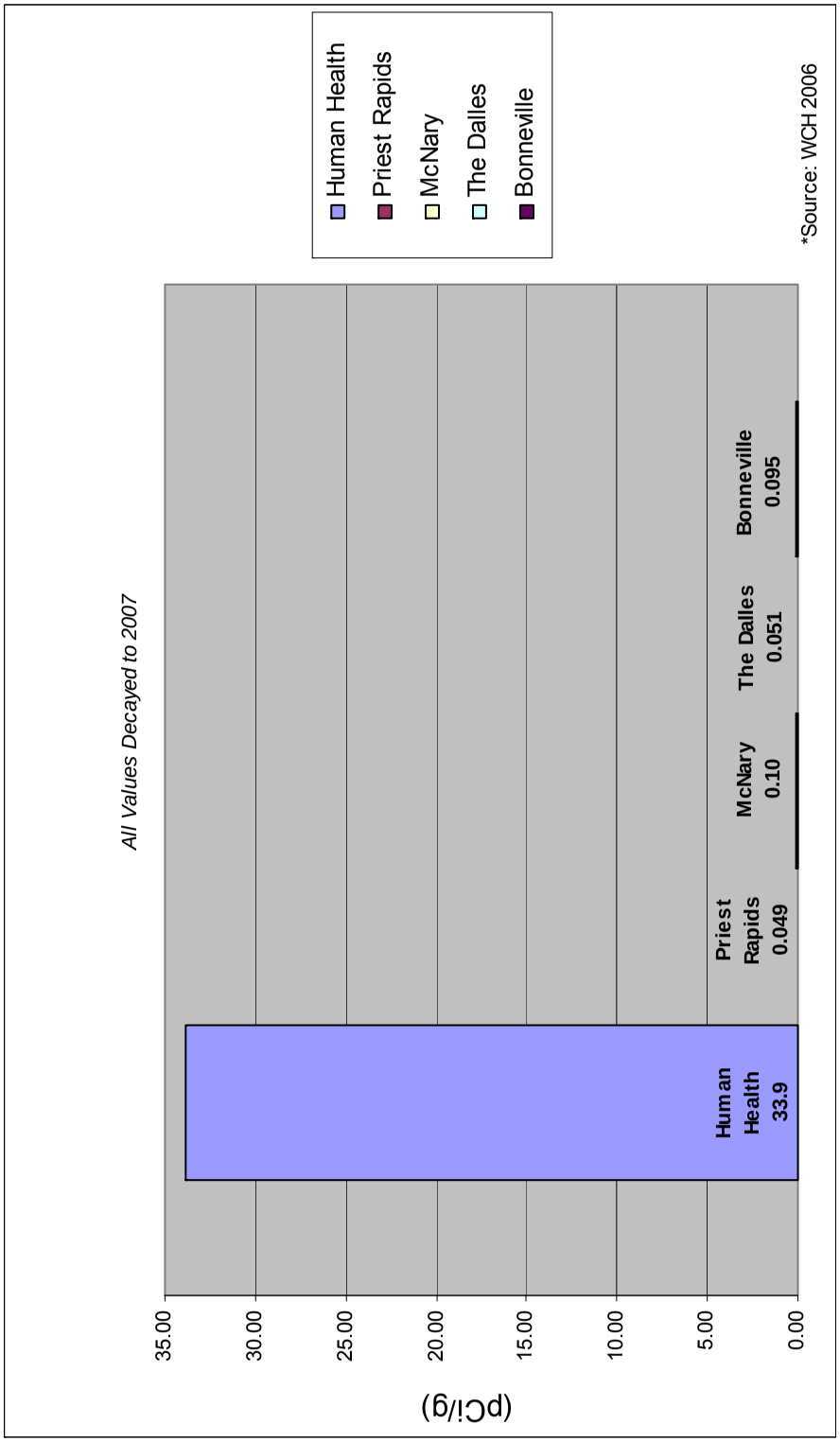


Figure 4-19. Maximum Radionuclide Concentrations Compared to Ecological Benchmark, Cobalt-60.

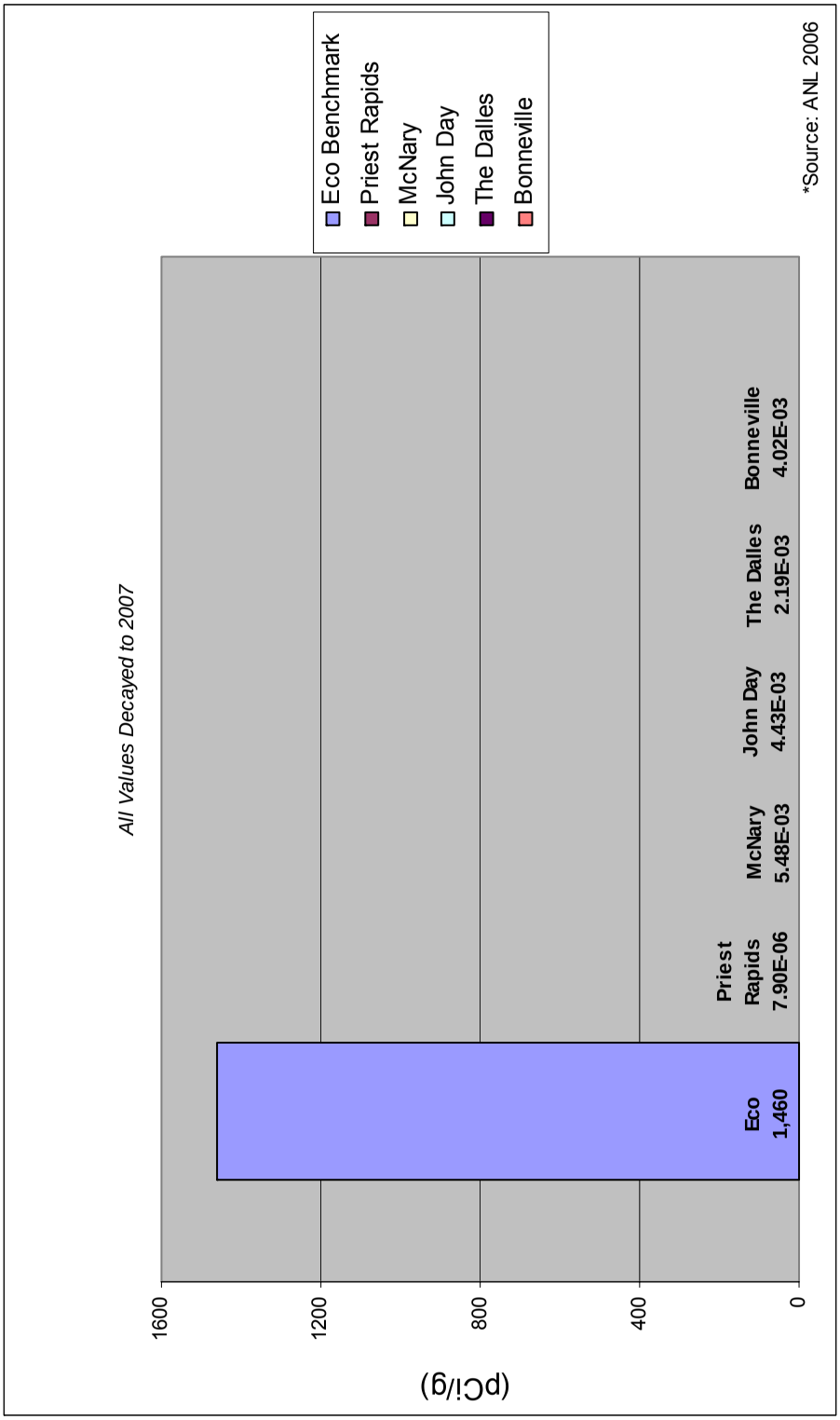


Figure 4-20. Maximum Radionuclide Concentrations Compared to Ecological Benchmark, Cesium-137.

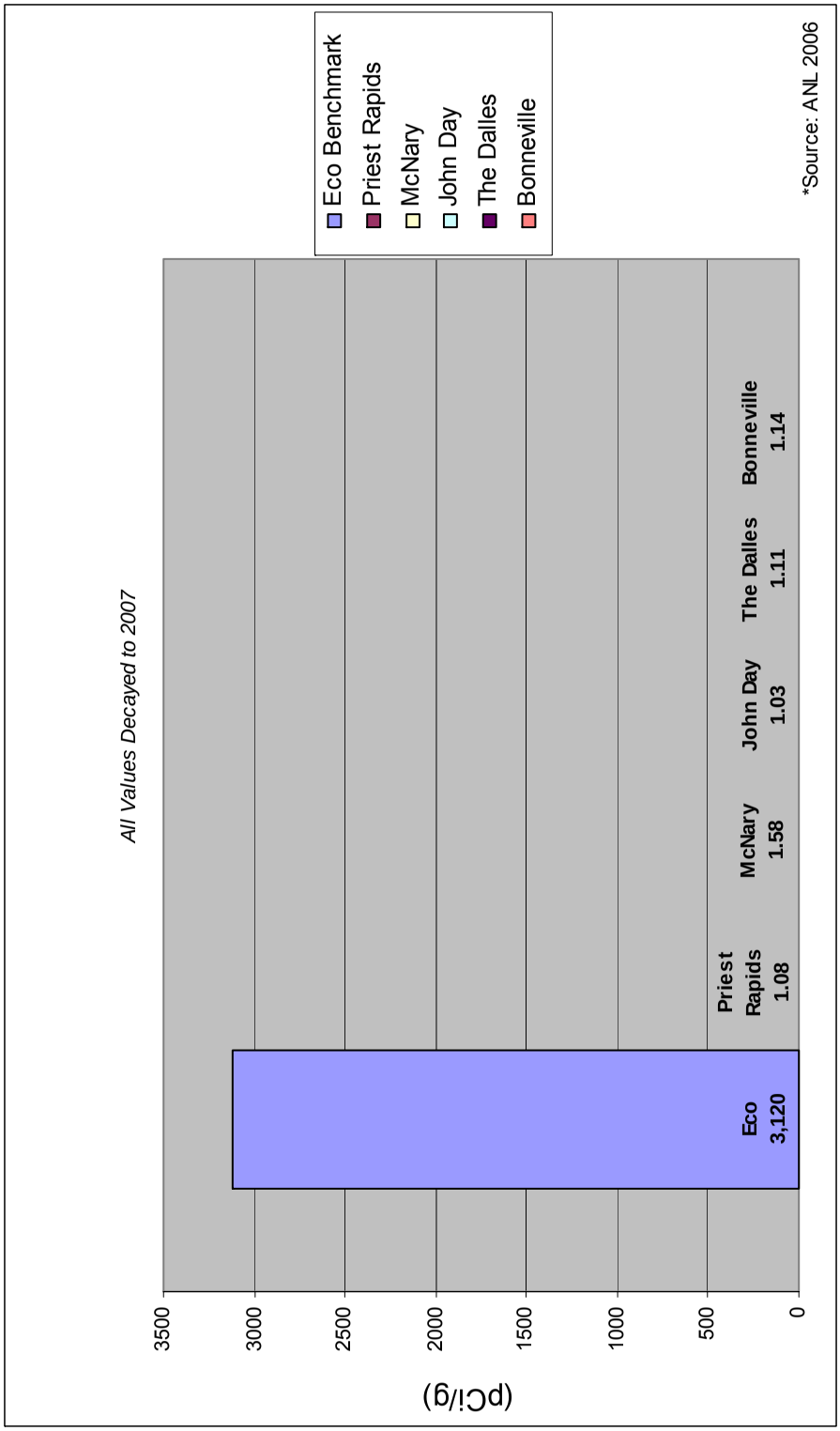


Figure 4-21. Maximum Radionuclide Concentrations Compared to Ecological Benchmark, Plutonium-239/240.

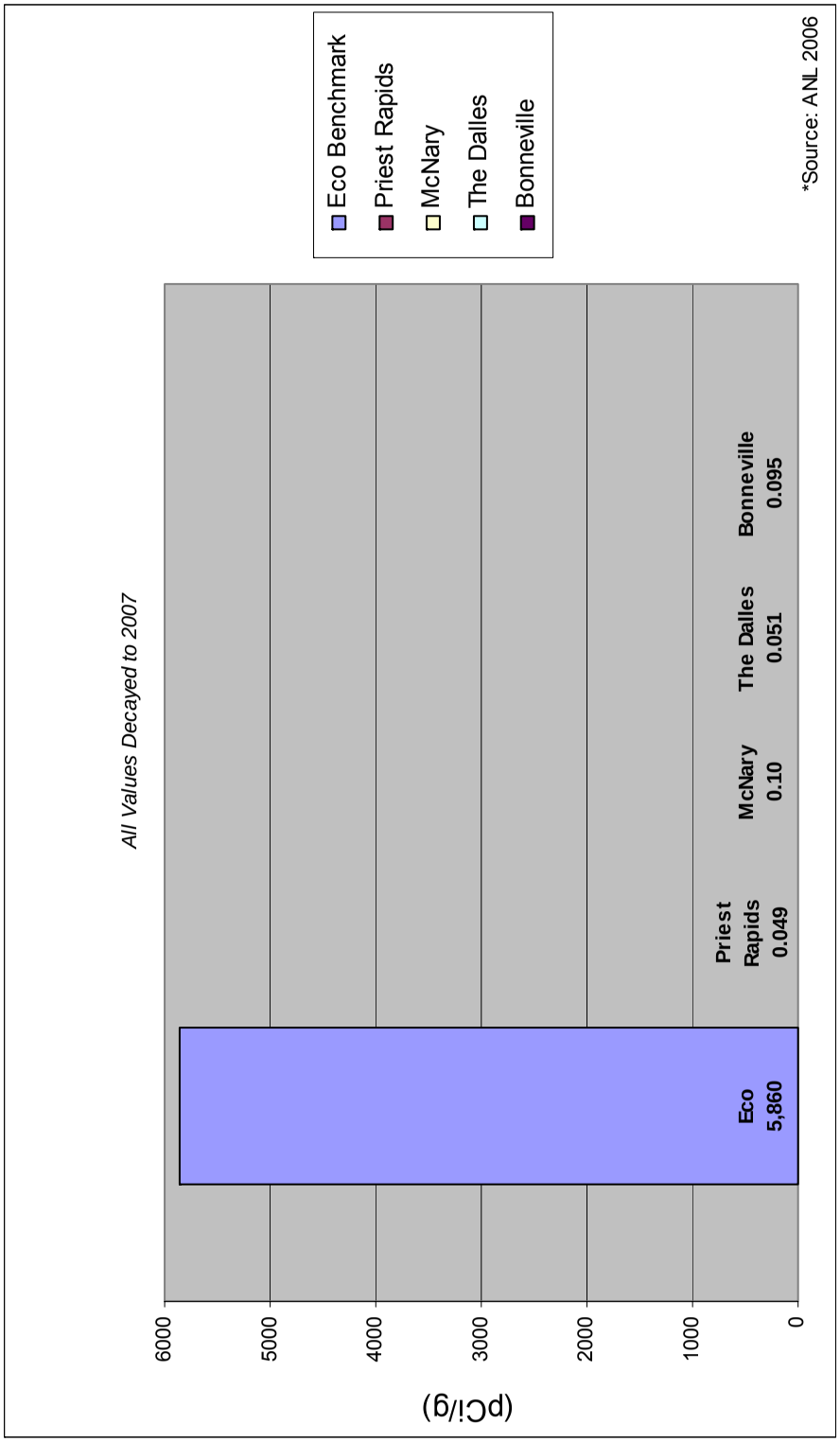


Table 4-1. Number of Sediment and Surface Water Sample Locations by Year by River Section.

Year	River Section Numbers						Total	
	I		II		III			
	Sediment	Surface Water	Sediment	Surface Water	Sediment	Surface Water	Sediment	Surface Water
1976	14	--	195	--	132	--	**341**	--
1977	--	--	33	--	6	--	**39**	--
1978	--	--	5	--	9	--	**14**	--
1979	--	--	5	--	10	--	**15**	--
1980	--	--	4	--	12	--	**16**	--
1981	--	--	5	--	10	--	**15**	--
1982	--	--	3	--	8	--	**11**	--
1983	--	--	6	--	8	--	**14**	--
1984	1	--	6	--	29	--	**36**	--
1985	--	--	12	--	9	--	**21**	--
1986	1	--	27	--	8	--	**36**	--
1987	--	--	17	--	25	--	**42**	--
1988	5	--	20	--	12	--	**37**	--
1989	5	--	20	--	13	--	**38**	--
1990	--	--	11	--	56	--	**67**	--
1991	4	--	37	--	19	--	**60**	--
1992	12	--	83	--	14	--	**109**	--
1993	5	--	24	--	26	--	**55**	--
1994	14	--	41	--	2	--	**57**	--
1995	12	--	39	--	1	--	**52**	--
1996	12	--	37	--	--	--	**49**	--
1997	3	--	15	--	85	--	**103**	--
1998	5	--	26	--	1	--	**32**	--
1999	67	244	100	452	12	54	**179**	**750**
2000	10	133	47	602	25	45	**82**	**780**
2001	18	160	68	694	38	52	**124**	**906**
2002	10	119	52	608	8	49	**70**	**776**
2003	14	140	113	802	61	68	**188**	**1010**
2004	21	100	117	529	8	74	**146**	**703**
2005	8	91	38	427	8	7	**54**	**525**
2006	12	18	63	74	--	--	**75**	**92**
Total	**253**	**1005**	**1269**	**4188**	**655**	**349**	**2177**	**5542**

Table 4-2. Summary of Sediment Samples by Analyte – River Section I. (5 Pages)

Year	Data	Bio	Dioxin	Herb	Inorganic	Metal	Organic	OrgPest	PCB	Pest	Pest/PCB	Physical	RAD	sVOC	Unkn	VOC	Total
1976	Sum of #Detected												49				**49**
	Sum of #Analyzed												84				**84**
1977	Sum of #Detected																
	Sum of #Analyzed																
1978	Sum of #Detected																
	Sum of #Analyzed																
1979	Sum of #Detected																
	Sum of #Analyzed																
1980	Sum of #Detected																
	Sum of #Analyzed																
1981	Sum of #Detected																
	Sum of #Analyzed																
1982	Sum of #Detected																
	Sum of #Analyzed																
1983	Sum of #Detected																

Table 4-2. Summary of Sediment Samples by Analyte – River Section I. (5 Pages)

Year	Data	Bio	Dioxin	Herb	Inorganic	Metal	Organic	OrgPest	PCB	Pest	Pest/PCB	Physical	RAD	sVOC	Unkn	VOC	Total
	Sum of #Analyzed																
1984	Sum of #Detected			0		5			0		1			0		0	**6**
	Sum of #Analyzed			3		7			1		34			20		15	**80**
1985	Sum of #Detected																
	Sum of #Analyzed																
1986	Sum of #Detected					10				0	0			0	0	0	**10**
	Sum of #Analyzed					12				2	17			3	2	6	**42**
1987	Sum of #Detected																
	Sum of #Analyzed																
1988	Sum of #Detected												49				**49**
	Sum of #Analyzed												74				**74**
1989	Sum of #Detected												41				**41**
	Sum of #Analyzed												75				**75**
1990	Sum of #Detected																
	Sum of #Analyzed																

Table 4-2. Summary of Sediment Samples by Analyte – River Section I. (5 Pages)

Year	Data	Bio	Dioxin	Herb	Inorganic	Metal	Organic	OrgPest	PCB	Pest	Pest/PCB	Physical	RAD	sVOC	Unkn	VOC	Total
1991	Sum of #Detected												32				**32**
	Sum of #Analyzed												72				**72**
1992	Sum of #Detected					73							86				**159**
	Sum of #Analyzed					96							175				**271**
1993	Sum of #Detected												37				**37**
	Sum of #Analyzed												85				**85**
1994	Sum of #Detected					68							66				**134**
	Sum of #Analyzed					68							134				**202**
1995	Sum of #Detected					76							56				**132**
	Sum of #Analyzed					84							80				**164**
1996	Sum of #Detected					78							51				**129**
	Sum of #Analyzed					84							89				**173**
1997	Sum of #Detected					3							19				**22**
	Sum of #Analyzed					3							25				**28**
1998	Sum of #Detected					4							32				**36**

Table 4-2. Summary of Sediment Samples by Analyte – River Section I. (5 Pages)

Year	Data	Bio	Dioxin	Herb	Inorganic	Metal	Organic	OrgPest	PCB	Pest	Pest/PCB	Physical	RAD	sVOC	Unkn	VOC	Total
	Sum of #Analyzed					4							50				**54**
1999	Sum of #Detected			0		367			0		0		41	0	6	0	**414**
	Sum of #Analyzed			69		411			217		915		48	508	6	496	**2670**
2000	Sum of #Detected					18							40		2		**60**
	Sum of #Analyzed					18							78		2		**98**
2001	Sum of #Detected					48			13	7	16		46				**130**
	Sum of #Analyzed					51			63	21	147		74				**356**
2002	Sum of #Detected					46							27		2		**75**
	Sum of #Analyzed					46							48		2		**96**
2003	Sum of #Detected				2	119							46		2		**169**
	Sum of #Analyzed				2	122							86		2		**212**
2004	Sum of #Detected		21		4	131			0	0	6		17	0			**179**
	Sum of #Analyzed		162		4	160			63	63	198		36	9			**695**
2005	Sum of #Detected				2	40							13				**55**
	Sum of #Analyzed				2	40							32				**74**

Table 4-2. Summary of Sediment Samples by Analyte – River Section I. (5 Pages)

Year	Data	Bio	Dioxin	Herb	Inorganic	Metal	Organic	OrgPest	PCB	Pest	Pest/PCB	Physical	RAD	sVOC	Unkn	VOC	Total
2006	Sum of #Detected	48		0	24	172	5		0		7	90	40	0		1	**387**
	Sum of #Analyzed	48		18	36	212	18		42		264	90	114	132		96	**1070**
Total Sum of #Detected		**48**	**21**	**0**	**32**	**1258**	**5**		**13**	**7**	**30**	**90**	**788**	**0**	**12**	**1**	**2305**
Total Sum of #Analyzed		**48**	**162**	**90**	**44**	**1418**	**18**		**386**	**86**	**1575**	**90**	**1459**	**672**	**14**	**613**	**6675**

Bio = various biological analyses (e.g., Hyalella growth, etc.)
Herb = herbicide
Inorganic = various non-metallic inorganic parameters (e.g., carbon, cyanide, nitrogen, etc.)
Organic = various organic parameters not otherwise listed in the table (e.g., total petroleum hydrocarbons, oil and grease, etc.)
PCB = polychlorinated biphenyl
PEST = pesticide
Physical = various parameters that may include grain size, total solids, etc.
RAD = radionuclide
sVOC = semi-volatile organic compound
Unkn = various parameters not grouped into another class of analytes in the database
VOC = volatile organic compound

Table 4-3. Summary of Surface Water Samples by Analyte - River Section I.

Year	Data	Herb	Inorganic	Metal	Organic	PCB	Pest	Pest/PCB	Physical	RAD	sVOC	Unkn	VOC	Total
1999	Sum of NumDetected		277	323					12	133		15	1	**761**
	Sum of NumAnalyzed		359	450					12	408		24	96	**1349**
2000	Sum of NumDetected		76	359					31	143		15	4	**628**
	Sum of NumAnalyzed		96	439					31	403		24	92	**1085**
2001	Sum of NumDetected		87	473			0	0	39	177		15	7	**798**
	Sum of NumAnalyzed		107	591			4	40	39	502		27	138	**1448**
2002	Sum of NumDetected		76	350					34	134		18	4	**616**
	Sum of NumAnalyzed		92	440					36	390		24	100	**1082**
2003	Sum of NumDetected		76	364					44	139		20	5	**648**
	Sum of NumAnalyzed		92	524					48	452		24	96	**1236**
2004	Sum of NumDetected		75	138					59	121		17	12	**422**
	Sum of NumAnalyzed		96	165					60	415		24	92	**852**
2005	Sum of NumDetected		77	107					57	107		4	0	**352**
	Sum of NumAnalyzed		95	128					57	408		6	104	**798**
2006	Sum of NumDetected	0	27	72	0	0		4	36	16	1		0	**156**
	Sum of NumAnalyzed	15	47	177	15	35		220	36	137	110		80	**872**
Total Sum of NumDetected		**0**	**771**	**2186**	**0**	**0**	**0**	**4**	**312**	**970**	**1**	**104**	**33**	**4381**
Total Sum of NumAnalyzed		**15**	**984**	**2914**	**15**	**35**	**4**	**260**	**319**	**3115**	**110**	**153**	**798**	**8722**

Herb = herbicide
Inorganic = various non-metallic inorganic parameters (e.g., alkalinity, chloride, cyanide, fluoride, nitrate, nitrite, etc.)
Organic = various organic parameters not otherwise listed in the table (e.g., total petroleum hydrocarbons, biochemical oxygen demand, etc.)
PCB = polychlorinated biphenyl
PEST = pesticide
Physical = various parameters that may include pH, specific conductance, temperature, turbidity, etc.
RAD = radionuclide
sVOC = semi-volatile organic compound
Unkn = various parameters not grouped into another class of analytes in the database
VOC = volatile organic compound

Table 4-4. Summary of Sediment Samples by Analyte – River Section II. (5 Pages)

Year	Data	Bio	Dioxin	Herb	Inorganic	Metal	Organic	OrgPest	PCB	Pest	Pest/PCB	Physical	RAD	sVOC	Unkn	VOC	Totals
1976	Sum of #Detected												890				890
	Sum of #Analyzed												1178				1178
1977	Sum of #Detected												84				84
	Sum of #Analyzed												87				87
1978	Sum of #Detected												16				16
	Sum of #Analyzed												39				39
1979	Sum of #Detected												10				10
	Sum of #Analyzed												36				36
1980	Sum of #Detected												5				5
	Sum of #Analyzed												27				27
1981	Sum of #Detected												8				8
	Sum of #Analyzed												35				35
1982	Sum of #Detected												4				4
	Sum of #Analyzed												11				11
1983	Sum of #Detected												32				32

Table 4-4. Summary of Sediment Samples by Analyte – River Section II. (5 Pages)

Year	Data	Bio	Dioxin	Herb	Inorganic	Metal	Organic	OrgPest	PCB	Pest	Pest/PCB	Physical	RAD	sVOC	Unkn	VOC	Totals
	Sum of #Analyzed												50				50
1984	Sum of #Detected			0		9			0		11		19	0		4	43
	Sum of #Analyzed			6		14			2		68		22	40		30	182
1985	Sum of #Detected			1		11	3		0	1	4	2	35	1		5	63
	Sum of #Analyzed			3		11	3		4	1	9	2	46	1		42	122
1986	Sum of #Detected			2		46			3	4	37		35	4	3	5	139
	Sum of #Analyzed			4		52			4	14	159		59	25	14	42	373
1987	Sum of #Detected					34							118		3		155
	Sum of #Analyzed					41							134		3		178
1988	Sum of #Detected			0		2			0	0	10		147	0		1	160
	Sum of #Analyzed			4		2			2	2	60		197	40		30	337
1989	Sum of #Detected												154				154
	Sum of #Analyzed												242				242
1990	Sum of #Detected			0							3		58	0		2	63
	Sum of #Analyzed			2							17		98	20		15	152

Table 4-4. Summary of Sediment Samples by Analyte – River Section II. (5 Pages)

Year	Data	Bio	Dioxin	Herb	Inorganic	Metal	Organic	OrgPest	PCB	Pest	Pest/PCB	Physical	RAD	sVOC	Unkn	VOC	Totals
1991	Sum of #Detected				8	42	10		3		18		180		0	10	271
	Sum of #Analyzed				10	49	17		40		232		328		2	54	732
1992	Sum of #Detected			3		785		0	0	0	8	3	695	0	3	0	1497
	Sum of #Analyzed			36		1050		6	44	28	360	3	1281	24	60	140	3032
1993	Sum of #Detected					3							168				171
	Sum of #Analyzed					3							306				309
1994	Sum of #Detected			1		166		0	0	0	2	1	222		2		394
	Sum of #Analyzed			14		168		10	5	13	81	1	423		10		725
1995	Sum of #Detected					226							200				426
	Sum of #Analyzed					250							267				517
1996	Sum of #Detected					232					6		168				406
	Sum of #Analyzed					249					6		271				526
1997	Sum of #Detected					5							84				89
	Sum of #Analyzed					5							151				156
1998	Sum of #Detected					166		0		0	0		104	0	0	0	270

Table 4-4. Summary of Sediment Samples by Analyte – River Section II. (5 Pages)

Year	Data	Bio	Dioxin	Herb	Inorganic	Metal	Organic	OrgPest	PCB	Pest	Pest/PCB	Physical	RAD	sVOC	Unkn	VOC	Totals
	Sum of #Analyzed					228		7		1	12		156	1	5	11	421
1999	Sum of #Detected					492							189		12		693
	Sum of #Analyzed					533							351		13		897
2000	Sum of #Detected					223							138		6		367
	Sum of #Analyzed					236							263		6		505
2001	Sum of #Detected					240							233				473
	Sum of #Analyzed					254							479				733
2002	Sum of #Detected					219						2	154		5		380
	Sum of #Analyzed					228						2	376		10		616
2003	Sum of #Detected			0	6	663			0		0		287	0	6	0	962
	Sum of #Analyzed			5	9	679			35		185		586	70	8	50	1627
2004	Sum of #Detected		70		12	624			3	5	57		182	0			953
	Sum of #Analyzed		702		12	758			266	266	830		442	38			3314
2005	Sum of #Detected				6	195							83				284
	Sum of #Analyzed				6	196							214				416

Table 4-4. Summary of Sediment Samples by Analyte – River Section II. (5 Pages)

Year	Data	Bio	Dioxin	Herb	Inorganic	Metal	Organic	OrgPest	PCB	Pest	Pest/PCB	Physical	RAD	sVOC	Unkn	VOC	Totals
2006	Sum of #Detected	179		0	151	907	30		3		69	468	240	0		12	2059
	Sum of #Analyzed	180		93	187	1126	93		217		1364	468	593	682		496	5499
Total Sum of #Detected		179	70	7	183	5290	43	0	12	10	225	476	4942	5	40	39	11521
Total Sum of #Analyzed		180	702	167	224	6132	113	23	619	325	3383	476	8748	941	131	910	23074

Bio = various biological analyses (e.g., Hyalella growth, etc.)
Herb = herbicide
Inorganic = various non-metallic inorganic parameters (e.g., carbon, cyanide, nitrogen, etc.)
Organic = various organic parameters not otherwise listed in the table (e.g., total petroleum hydrocarbons, oil and grease, etc.)
PCB = polychlorinated biphenyl
PEST = pesticide
Physical = various parameters that may include grain size, total solids, etc.
RAD = radionuclide
sVOC = semi-volatile organic compound
Unkn = various parameters not grouped into another class of analytes in the database
VOC = volatile organic compound

Table 4-5. Summary of Surface Water Samples by Analyte - River Section II.

Year	Data	Herb	Inorganic	Metal	Organic	PCB	Pest	Pest/PCB	Physical	RAD	sVOC	Unkn	VOC	Total
1999	Sum of NumDetected		478	1341	0				66	499		46	10	**2440**
	Sum of NumAnalyzed		572	1746	4				66	1305		46	333	**4072**
2000	Sum of NumDetected		452	2258	0				72	513		47	36	**3378**
	Sum of NumAnalyzed		576	3002	5				72	1373		47	435	**5510**
2001	Sum of NumDetected		391	2439					54	755		24	12	**3675**
	Sum of NumAnalyzed		511	2991					54	2285		24	393	**6258**
2002	Sum of NumDetected		436	2204		0	0	21	132	534		26	52	**3405**
	Sum of NumAnalyzed		544	2979		14	50	130	132	1774		32	364	**6019**
2003	Sum of NumDetected		624	2382			0	19	190	621		24	53	**3913**
	Sum of NumAnalyzed		763	3549			40	80	190	2464		24	985	**8095**
2004	Sum of NumDetected		500	1724					329	472		24	24	**3073**
	Sum of NumAnalyzed		613	2068					330	1928		25	299	**5263**
2005	Sum of NumDetected		519	1586					328	357		12	33	**2835**
	Sum of NumAnalyzed		620	2003					328	931		12	364	**4258**
2006	Sum of NumDetected	0	170	507	1	0		33	204	88	1		6	**1010**
	Sum of NumAnalyzed	102	300	1179	101	238		1496	204	750	748		544	**5662**
Total Sum of NumDetected		**0**	**3570**	**14441**	**1**	**0**	**0**	**73**	**1375**	**3839**	**1**	**203**	**226**	**23729**
Total Sum of NumAnalyzed		**102**	**4499**	**19517**	**110**	**252**	**90**	**1706**	**1376**	**12810**	**748**	**210**	**3717**	**45137**

Herb = herbicide
Inorganic = various non-metallic inorganic parameters (e.g., alkalinity, chloride, cyanide, fluoride, nitrate, nitrite, etc.)
Organic = various organic parameters not otherwise listed in the table (e.g., total petroleum hydrocarbons, biochemical oxygen demand, etc.)
PCB = polychlorinated biphenyl
PEST = pesticide
Physical = various parameters that may include pH, specific conductance, temperature, turbidity, etc.
RAD = radionuclide
sVOC = semi-volatile organic compound
Unkn = various parameters not grouped into another class of analytes in the database
VOC = volatile organic compound

Table 4-6. Summary of Sediment Samples by Analyte – River Section III. (4 Pages)

Year	Data	Bio	Dioxin	Herb	Inorganic	Metal	Organic	OrgPest	PCB	Pest	Pest/PCB	Physical	RAD	sVOC	Unkn	VOC	Total
1976	Sum of #Detected												468				**468**
	Sum of #Analyzed												672				**672**
1977	Sum of #Detected												13				**13**
	Sum of #Analyzed												37				**37**
1978	Sum of #Detected												26				**26**
	Sum of #Analyzed												60				**60**
1979	Sum of #Detected					24					1		18		5		**48**
	Sum of #Analyzed					24					1		62		5		**92**
1980	Sum of #Detected												23				**23**
	Sum of #Analyzed												60				**60**
1981	Sum of #Detected				2	22					1		20		5		**50**
	Sum of #Analyzed				2	22					1		51		5		**81**
1982	Sum of #Detected												12				**12**
	Sum of #Analyzed												40				**40**
1983	Sum of #Detected				1	19					1		13		5		**39**
	Sum of #Analyzed				1	19					1		48		5		**74**

Table 4-6. Summary of Sediment Samples by Analyte – River Section III. (4 Pages)

Year	Data	Bio	Dioxin	Herb	Inorganic	Metal	Organic	OrgPest	PCB	Pest	Pest/PCB	Physical	RAD	sVOC	Unkn	VOC	Total
1984	Sum of #Detected			0		156					15		12	1	5	11	**200**
	Sum of #Analyzed			12		166					192		24	114	5	86	**599**
1985	Sum of #Detected												15				**15**
	Sum of #Analyzed												28				**28**
1986	Sum of #Detected												12				**12**
	Sum of #Analyzed												24				**24**
1987	Sum of #Detected					168					77		33		5	116	**399**
	Sum of #Analyzed					240					109		48		5	180	**582**
1988	Sum of #Detected												31				**31**
	Sum of #Analyzed												48				**48**
1989	Sum of #Detected					51	3				13		34		5	19	**125**
	Sum of #Analyzed					51	3				19		46		5	33	**157**
1990	Sum of #Detected		149	0	17	78			0		26		37	1	40	8	**356**
	Sum of #Analyzed		285	9	30	91			21		163		51	61	46	150	**907**
1991	Sum of #Detected		55		2	23			0		3		36		5		**124**
	Sum of #Analyzed		121		2	23			8		25		51		5		**235**

Table 4-6. Summary of Sediment Samples by Analyte – River Section III. (4 Pages)

Year	Data	Bio	Dioxin	Herb	Inorganic	Metal	Organic	OrgPest	PCB	Pest	Pest/PCB	Physical	RAD	sVOC	Unkn	VOC	Total
1992	Sum of #Detected				2	22					1		43		5		**73**
	Sum of #Analyzed				2	22					1		63		5		**93**
1995	Sum of #Detected				2	22					1		6		5		**36**
	Sum of #Analyzed				2	22					1		6		5		**36**
1996	Sum of #Detected																
	Sum of #Analyzed																
1997	Sum of #Detected			0		306			3	8	177		2	15	85	218	**814**
	Sum of #Analyzed			8		398			58	18	439		2	27	87	358	**1395**
1998	Sum of #Detected					24					1		1		5		**31**
	Sum of #Analyzed					24					1		1		5		**31**
1999	Sum of #Detected			2	2	79			0		29		1	13	16	42	**184**
	Sum of #Analyzed			11	2	133			77		375		1	88	16	176	**879**
2000	Sum of #Detected		9	0		84			0		10			0	25	15	**143**
	Sum of #Analyzed		136	25		100			70		395			135	25	160	**1046**
2001	Sum of #Detected		12			145			6		84		1	7	7	50	**312**
	Sum of #Analyzed		119			154			26		302		1	7	38	150	**797**

Table 4-6. Summary of Sediment Samples by Analyte – River Section III. (4 Pages)

Year	Data	Bio	Dioxin	Herb	Inorganic	Metal	Organic	OrgPest	PCB	Pest	Pest/PCB	Physical	RAD	sVOC	Unkn	VOC	Total
2002	Sum of #Detected					103			1		22			3		11	**140**
	Sum of #Analyzed					107			56		36			4		40	**243**
2003	Sum of #Detected		10	1	5	449			1		116		134	4	2	108	**830**
	Sum of #Analyzed		85	16	6	493			43		485		200	91	3	310	**1732**
2004	Sum of #Detected				3	32							22				**57**
	Sum of #Analyzed				3	32							33				**68**
2005	Sum of #Detected			6		79			0		95			22	8	98	**308**
	Sum of #Analyzed			8		88			56		184			65	8	128	**537**
2006	Sum of #Detected																
	Sum of #Analyzed																
Total Sum of #Detected			**243**	**9**	**98**	**2902**	**3**		**12**	**8**	**859**	**15**	**1664**	**66**	**427**	**808**	**7114**
Total Sum of #Analyzed			**986**	**119**	**126**	**3287**	**3**		**523**	**63**	**3523**	**15**	**2493**	**862**	**491**	**1987**	**14478**

Bio = various biological analyses (e.g., Hyalella growth, etc.)
Herb = herbicide
Inorganic = various non-metallic inorganic parameters (e.g., carbon, cyanide, nitrogen, etc.)
Organic = various organic parameters not otherwise listed in the table (e.g., total petroleum hydrocarbons, oil and grease, etc.)
PCB = polychlorinated biphenyl
PEST = pesticide
Physical = various parameters that may include grain size, total solids, etc.
RAD = radionuclide
sVOC = semi-volatile organic compound
Unkn = various parameters not grouped into another class of analytes in the database
VOC = volatile organic compound

Table 4-7. Summary of Surface Water Samples by Analyte - River Section III.

Year	Data	Herb	Inorganic	Metal	Organic	PCB	Pest	Pest/PCB	Physical	RAD	sVOC	Unkn	VOC	Total
1999	Sum of NumDetected		193	128			5	63	65			24		**478**
	Sum of NumAnalyzed		200	182			36	730	65			42		**1255**
2000	Sum of NumDetected		149	117			2	37	59	2		19		**385**
	Sum of NumAnalyzed		167	210			26	529	59	8		32		**1031**
2001	Sum of NumDetected		140	158			0	29	61	2		17		**407**
	Sum of NumAnalyzed		154	227			22	431	61	8		29		**932**
2002	Sum of NumDetected		104	147			1	17	66	2		18		**355**
	Sum of NumAnalyzed		116	272			14	350	66	8		26		**852**
2003	Sum of NumDetected		75	84		2	5	135	104	1	5	29	76	**516**
	Sum of NumAnalyzed		84	171		5	5	214	104	6	5	29	80	**703**
2004	Sum of NumDetected		54	56		7	10	279	79	0	5	17	94	**601**
	Sum of NumAnalyzed		66	112		11	10	451	80	6	11	17	169	**933**
2005	Sum of NumDetected		13	13					16	0		3		**45**
	Sum of NumAnalyzed		19	42					16	4		3		**84**
2006	Sum of NumDetected													
	Sum of NumAnalyzed													
Total Sum of NumDetected			**728**	**703**		**9**	**23**	**560**	**450**	**7**	**10**	**127**	**170**	**2787**
Total Sum of NumAnalyzed			**806**	**1216**		**16**	**113**	**2705**	**451**	**40**	**16**	**178**	**249**	**5790**

Herb = herbicide
Inorganic = various non-metallic inorganic parameters (e.g., alkalinity, chloride, cyanide, fluoride, nitrate, nitrite, etc.)
Organic = various organic parameters not otherwise listed in the table (e.g., total petroleum hydrocarbons, biochemical oxygen demand, etc.)
PCB = polychlorinated biphenyl
PEST = pesticide
Physical = various parameters that may include pH, specific conductance, temperature, turbidity, etc.
RAD = radionuclide
sVOC = semi-volatile organic compound
Unkn = various parameters not grouped into another class of analytes in the database
VOC = volatile organic compound

Table 4-8. Summary of Sediment Core by Analyte – River Section I. (2 Pages)

Year	Data	Herb	Inorganic	Metal	Organic	PCB	Pest	Pest/PCB	RAD	sVOC	Unkn	VOC	Total
1976	Sum of #Detected								49				**49**
	Sum of #Analyzed								84				**84**
1977	Sum of #Detected												
	Sum of #Analyzed												
1979	Sum of #Detected												
	Sum of #Analyzed												
1981	Sum of #Detected												
	Sum of #Analyzed												
1983	Sum of #Detected												
	Sum of #Analyzed												
1984	Sum of #Detected												
	Sum of #Analyzed												
1986	Sum of #Detected			10			0	0		0	0	0	**10**
	Sum of #Analyzed			12			2	17		3	2	6	**42**
1987	Sum of #Detected												
	Sum of #Analyzed												
1989	Sum of #Detected												
	Sum of #Analyzed												
1990	Sum of #Detected												
	Sum of #Analyzed												
1991	Sum of #Detected												
	Sum of #Analyzed												
1992	Sum of #Detected												
	Sum of #Analyzed												
1993	Sum of #Detected												
	Sum of #Analyzed												
1994	Sum of #Detected												
	Sum of #Analyzed												
1995	Sum of #Detected												

Table 4-8. Summary of Sediment Core by Analyte – River Section I. (2 Pages)

Year	Data	Herb	Inorganic	Metal	Organic	PCB	Pest	Pest/PCB	RAD	sVOC	Unkn	VOC	Total
	Sum of #Analyzed												
1997	Sum of #Detected												
	Sum of #Analyzed												
1998	Sum of #Detected												
	Sum of #Analyzed												
1999	Sum of #Detected								16				**16**
	Sum of #Analyzed								16				**16**
2001	Sum of #Detected			7		13	7	16					**43**
	Sum of #Analyzed			7		63	21	147					**238**
Total Sum of #Detected				**17**		**13**	**7**	**16**	**65**	**0**	**0**	**0**	**118**
Total Sum of #Analyzed				**19**		**63**	**23**	**164**	**100**	**3**	**2**	**6**	**380**

Herb = herbicide
Inorganic = various non-metallic inorganic parameters (e.g., carbon, cyanide, nitrogen, etc.)
Organic = various organic parameters not otherwise listed in the table (e.g., total petroleum hydrocarbons, oil and grease, etc.)
PCB = polychlorinated biphenyl
PEST = pesticide
RAD = radionuclide
sVOC = semi-volatile organic compound
Unkn = unknown
VOC = volatile organic compound

Table 4-9. Summary of Sediment Core by Analyte – River Section II. (2 Pages)

Year	Data	Herb	Inorganic	Metal	Organic	PCB	Pest	Pest/PCB	RAD	sVOC	Unknown	VOC	Total
1976	Sum of #Detected								889				**889**
	Sum of #Analyzed								1171				**1171**
1977	Sum of #Detected								80				**80**
	Sum of #Analyzed								80				**80**
1979	Sum of #Detected												
	Sum of #Analyzed												
1981	Sum of #Detected												
	Sum of #Analyzed												
1983	Sum of #Detected												
	Sum of #Analyzed												
1984	Sum of #Detected												
	Sum of #Analyzed												
1986	Sum of #Detected			30			4	16		0	3	5	**58**
	Sum of #Analyzed			36			14	119		21	14	42	**246**
1987	Sum of #Detected												
	Sum of #Analyzed												
1989	Sum of #Detected												
	Sum of #Analyzed												
1990	Sum of #Detected												
	Sum of #Analyzed												
1991	Sum of #Detected												
	Sum of #Analyzed												
1992	Sum of #Detected												
	Sum of #Analyzed												

Table 4-9. Summary of Sediment Core by Analyte – River Section II. (2 Pages)

Year	Data	Herb	Inorganic	Metal	Organic	PCB	Pest	Pest/PCB	RAD	sVOC	Unknown	VOC	Total
1993	Sum of #Detected												
	Sum of #Analyzed												
1994	Sum of #Detected												
	Sum of #Analyzed												
1995	Sum of #Detected												
	Sum of #Analyzed												
1997	Sum of #Detected												
	Sum of #Analyzed												
1998	Sum of #Detected												
	Sum of #Analyzed												
1999	Sum of #Detected			183					16				**199**
	Sum of #Analyzed			189					16				**205**
2001	Sum of #Detected												
	Sum of #Analyzed												
Total Sum of #Detected				**213**			**4**	**16**	**985**	**0**	**3**	**5**	**1226**
Total Sum of #Analyzed				**225**			**14**	**119**	**1267**	**21**	**14**	**42**	**1702**

Herb = herbicide
Inorganic = various non-metallic inorganic parameters (e.g., carbon, cyanide, nitrogen, etc.)
Organic = various organic parameters not otherwise listed in the table (e.g., total petroleum hydrocarbons, oil and grease, etc.)
PCB = polychlorinated biphenyl
PEST = pesticide
RAD = radionuclide
sVOC = semi-volatile organic compound
Unkn = unknown
VOC = volatile organic compound

Table 4-10. Summary of Sediment Core by Analyte – River Section III. (2 Pages)

Year	Data	Herb	Inorganic	Metal	Organic	PCB	Pest	Pest/PCB	RAD	sVOC	Unknown	VOC	Total
1976	Sum of #Detected								448				**448**
	Sum of #Analyzed								625				**625**
1977	Sum of #Detected												
	Sum of #Analyzed												
1979	Sum of #Detected			24				1	1		5		**31**
	Sum of #Analyzed			24				1	1		5		**31**
1981	Sum of #Detected		2	22				1	6		5		**36**
	Sum of #Analyzed		2	22				1	6		5		**36**
1983	Sum of #Detected		1	19				1	6		5		**32**
	Sum of #Analyzed		1	19				1	6		5		**32**
1984	Sum of #Detected	0		156				15	6	1	5	11	**194**
	Sum of #Analyzed	12		166				192	6	114	5	86	**581**
1986	Sum of #Detected												
	Sum of #Analyzed												
1987	Sum of #Detected			24				1	1		5		**31**
	Sum of #Analyzed			24				1	1		5		**31**
1989	Sum of #Detected			51	3			13	1		5	19	**92**
	Sum of #Analyzed			51	3			19	1		5	33	**112**
1990	Sum of #Detected			24				1	1		5		**31**
	Sum of #Analyzed			24				1	1		5		**31**
1991	Sum of #Detected		2	23				1	1		5		**32**
	Sum of #Analyzed		2	23				1	1		5		**32**
1992	Sum of #Detected		2	22				1	6		5		**36**
	Sum of #Analyzed		2	22				1	6		5		**36**
1993	Sum of #Detected			24		0		14			3	4	**45**
	Sum of #Analyzed			24		3		24			3	6	**60**

Table 4-10. Summary of Sediment Core by Analyte – River Section III. (2 Pages)

Year	Data	Herb	Inorganic	Metal	Organic	PCB	Pest	Pest/PCB	RAD	sVOC	Unknown	VOC	Total
1994	Sum of #Detected			45				2	7		10		**64**
	Sum of #Analyzed			45				2	7		10		**64**
1995	Sum of #Detected		2	22				1	6		5		**36**
	Sum of #Analyzed		2	22				1	6		5		**36**
1997	Sum of #Detected			48				2	2		10		**62**
	Sum of #Analyzed			48				2	2		10		**62**
1998	Sum of #Detected			24				1	1		5		**31**
	Sum of #Analyzed			24				1	1		5		**31**
1999	Sum of #Detected		2	23				1	1		5		**32**
	Sum of #Analyzed		2	23				1	1		5		**32**
2001	Sum of #Detected			24				1	1		5		**31**
	Sum of #Analyzed			24				1	1		5		**31**
Total Sum of #Detected		**0**	**42**	**1314**	**3**	**0**		**89**	**542**	**1**	**248**	**34**	**2273**
Total Sum of #Analyzed		**12**	**42**	**1324**	**3**	**3**		**282**	**719**	**114**	**248**	**125**	**2872**

Herb = herbicide
Inorganic = various non-metallic inorganic parameters (e.g., carbon, cyanide, nitrogen, etc.)
Organic = various organic parameters not otherwise listed in the table (e.g., total petroleum hydrocarbons, oil and grease, etc.)
PCB = polychlorinated biphenyl
PEST = pesticide
RAD = radionuclide
sVOC = semi-volatile organic compound
Unkn = unknown
VOC = volatile organic compound

Table 4-11. Dam Construction Along the Columbia River.

Name	Location Relative to the Hanford Site	Construction Dates[a]
Bonneville Dam	Downstream	1935 to 1937
Grand Coulee Dam	Upstream	1938 to 1941
McNary Dam	Directly downstream	1947 to 1954
The Dalles Dam	Downstream	1952 to 1957
John Day Dam	Downstream	1958 to 1971
Priest Rapids Dam	Directly upstream	1956 to 1961
Ice Harbor Dam	Last dam on the Snake River near confluence with Columbia River	1955 to 1961

[a] Dam construction dates from U.S. Army Corps of Engineers.

Table 4-12. Hanford Site Single-Pass Cooling Water Reactor Timeline.

Reactor	Starts Production	Shut Down
105-B	September 1944	February 1968
105-D	December 1944	June 1967
105-F	February 1945	June 1963
105-H	October 1949	April 1965
105-C	November 1952	April 1969
105-DR	October 1949	1964
105-KW	January 1955	February 1970
105-KE	April 1955	January 1971

Table 4-13. Annual Flow and Sediment Transport.

River	Average Flow (ft^3/sec)[a]	Suspended Solids (kg/m^3)[b]	Estimated Suspended Sediment Load (tons/day)
Columbia (at Priest Rapids Dam)	117,480	0.00375	1,188
Snake	54,830	0.016	2,366
Yakima	3,512	0.06	568

Notes:
[a] USGS 2006.
[b] PNNL-14027

5.0 IDENTIFICATION AND EVALUATION OF SITE ANALYTES

This section presents the results of Steps 5 and 6: Identification of Site Analytes (Step 5) and Identification of Preliminary Data Gaps (Step 6), as they were listed and described in Section 2.0. As described previously, these two steps form the core of the Data Gap Analysis, since they both define the array of compounds for detailed analysis (Step 5) and provide a detailed, area- and compound-based data review. The results of this assessment are provided in the following subsections.

5.1 IDENTIFICATION OF SITE ANALYTES

As described in Section 2.5, Site Analytes are the specific compounds for which the detailed Data Gap Analysis was conducted. This list of Site Analytes was derived from a combination of the original 100/300 Area RCBRA COPCs, as presented in Tables 4-17 and 4-18 of the 100/300 Area RA, plus other surface water and sediment compounds detected in the Primary Study Area. This combined list of compounds was subject to the following evaluation process:

1. Compare maximum detected concentration to lowest of either the human health or ecological risk-based values

2. Compare to site-specific upriver background concentrations

3. Remove known laboratory contaminants

4. Evaluate low frequency of exceedance

5. Revise according to additional considerations: groundwater and biota data, site use, 100/300 Area RCBRA findings, etc.

Tables 5-1 and 5-2 present the starting list of compounds (as described in Section 2.5) with associated statistical information for sediment and surface water, respectively. Surface water results presented in Table 5-2 include near-shore samples, channel samples, seep samples and spring samples. In addition, relevant ecological and human health risk-based screening criteria, obtained from the sources described in Section 2.5, are also provided. Statistical information for each compound includes the number of samples analyzed, number of detections, frequency of detection, minimum and maximum concentration detected, and average concentration. These data provide the basis for much of the evaluation in the following sections.

5.1.1 Risk-Based Criteria Evaluation

For the risk-based evaluation, the maximum detected concentration of each compound was compared to the lower of either the ecological- or human health-based benchmark. Tables 5-1 and 5-2 identify all compounds that exceed the lowest human or ecological risk-based criteria with a ”yes” under ’Is Max > benchmark' column for the applicable criteria. Compounds exceeding the lowest of these standards are carried forward into the next step in the Site Analyte selection process.

Table 5-3 presents a summary of compounds in sediments that exceeded either the ecological or human health criteria. The table also shows which criterion was exceeded. Maximum

concentrations of the following analytes exceed one or both of the applicable criteria for sediments.

- Sediment Metals Exceeding Benchmarks: Aluminum, antimony, arsenic, barium, cadmium, chromium, iron, manganese, mercury, nickel, selenium, vanadium, and zinc.

- Sediment Organics Exceeding Benchmarks: Polyaromatic hydrocarbons (PAHs), pentachlorophenol, Arochlor 1254, benzoic acid, bis(2-ethylhexyl)phthalate, the pesticides dieldrin and gamma BHC, phenol, 4-methyl-2-pentanone, diethylphthalate, di-n-butylphthalate, xylenes, and 2-hexanone.

- Sediment Radionuclides Exceeding Benchmarks: Cesium-137, cobalt-60, europium-152, strontium-90, thorium-232, uranium-234, and uranium-238.

Table 5-4 presents a summary of compounds in surface water that exceeded either the ecological or human health criteria. The table also includes an indication of which criteria were exceeded. The following analytes exceed one or both of the applicable criteria for surface water:

- Surface Water Metals Exceeding Benchmarks: Aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, chromium, copper, chromium-hexavalent, iron, lead, manganese, mercury, selenium, silver, thallium, uranium, vanadium, and zinc.

- Surface Water Organics Exceeding Benchmarks: Bis(2-ethylhexyl)phthalate, pesticides, carbon tetrachloride, 1,1,2-trichlorethane (TCA), 1,2-dichlorethane (DCA), chloroform, PCE, and TCE.

- Surface Water Radionuclides Exceeding Benchmarks: Potassium-40, strontium-90, tritium, uranium-234, and uranium-238.

In the next step of this evaluation, compounds from Table 5-3 and Table 5-4 were compared to background conditions.

5.1.2 Background Evaluation

For purposes of this numerical comparison, "background" was considered to be samples from upstream areas of the Columbia River, specifically the Priest Rapids pool and the area between the Vernita Bridge and Priest Rapids Dam. These areas reflect local anthropogenic sources, but do not receive contributions from the Hanford Site.

In the following subsections, maximum concentrations of the compounds identified in Section 5.1.1 above were compared to the average concentration, calculated as a geometric mean, in upriver background samples. The geometric mean was used because this value is less sensitive to outlying data and therefore is a more conservative estimate than the more common arithmetic mean.

5.1.2.1 Sediment Compounds Eliminated by Background Comparison. Table 5-5 presents a comparison of sediment concentrations to background concentrations in sediments. Compounds listed in Table 5-3 are shown in the first column, the maximum detected concentration is shown in the second column, and the calculated average concentration

(geometric mean) by analyte for upriver (e.g., above Vernita Bridge) samples are shown in the third column. If upriver samples were reported as below detection limits, one-half of the PQL was used as the background average. In this evaluation, the upriver concentration is compared to all results from below Vernita Bridge; if the concentration upriver is higher, the analyte was not retained for further evaluation, as shown in bold text in the fourth column in Table 5-5. If the concentration in the Hanford Reach was higher than upriver concentrations, then the location and number of samples that exceeded background concentrations were considered. The following provides a short discussion of those analytes that were not retained after this evaluation.

Aluminum – The average aluminum concentration in background samples was calculated as 10,663 mg/kg. Only three sediment samples collected from the Hanford Reach were reported above this average background concentration. Based on the number of samples collected and the low frequency of exceedance of background concentrations, this analyte was not retained for further evaluation.

Cadmium – The average cadmium concentration in background samples was calculated as 5.4 mg/kg. Only three sediment samples collected from the Hanford Reach were reported above this average background concentration. Cadmium concentrations increase significantly in River Section III, suggesting other non-Hanford Site-related sources. Therefore, this analyte was not retained for further evaluation.

Iron – The average iron concentration in background samples was calculated as 13,044 mg/kg. Only five sediment samples collected from the Hanford Reach were reported above this average background concentration. Iron concentrations increase significantly in River Section III, suggesting other non-Hanford Site-related sources. Therefore, this analyte was not retained for further evaluation.

Nickel – The average nickel concentration in background samples was calculated as 23.5 mg/kg. Only two sediment samples collected from the Hanford Reach were reported above this average background concentration. Therefore, this analyte was not retained for further evaluation.

Zinc – The average zinc concentration in upriver samples was calculated as 428.5 mg/kg. The highest concentrations of zinc were reported above Priest Rapids Dam, reported at 1,200 mg/kg. There is a significant decrease in zinc concentrations along the Hanford Reach. Zinc is a known contaminant from upriver mining and smelting activities. Therefore, this analyte was not retained for further evaluation.

PAHs – Six PAHs (dibenz[a,h]anthracene, benzo(a)anthrancene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, and chrysene) exceeded human health risk screening criteria. All were reported downriver of the Hanford Site. These compounds are common artifacts of industrial activities and common fuel constituents and arise largely from stormwater runoff from roads and other impervious surfaces, as well as from harbor facilities and marine use. These types of infrastructures are relatively rare in the Hanford Reach area but characterize much of the watershed in the Richland, Kennewick, and Pasco area along the river. Because PAH compounds are clearly associated with off-site land use in a manner similar to compounds present in upstream background samples, they were not retained for further evaluation.

Aroclor 1254 – Maximum detected concentrations of Aroclors in sediment (0.024 mg/kg) were well below concentrations detected in upriver background samples (0.979 mg/kg). For this reason, Aroclors were not retained based on a comparison to background. However, as described in Section 5.1.4.3, PCBs were ultimately retained as a Site Analyte based on other considerations.

Benzoic Acid – Benzoic acid is a natural decay product that frequently is present in organic sediment. It was not actually detected in any sediment samples from the Primary Study Area; the maximum value is based on a detection level, which is elevated as the likely result of moisture in the sample. It is also used as an intermediary in some manufacturing processes, none of which occurred at the Hanford Site. The maximum detected concentration of benzoic acid (1.1 mg/kg) was very close to the average upriver background concentration (1.65 mg/kg), suggesting that this compound is common to both areas. For these reasons, it was not retained for further evaluation.

Dieldrin, gamma BHC (Lindane) – These agricultural insecticides were detected in less than 3% of sediment samples, at maximum concentrations less than the detection limit in upriver background samples. Dieldrin was used as a broad spectrum insecticide until its ban in 1974. Lindane is also an insecticide used for seed treatment of a wide variety of agricultural crops. Both were likely used in the extensive agricultural fields north of the Hanford Site. Because these pesticides were potentially widely used both in upriver background areas and adjacent to the site, they were not retained for further evaluation.

Phenol – Phenol is frequently present naturally in decaying organic matter such as sediment. No phenol was detected in sediment samples; maximum values are based on detection limits. It has no known use at the Hanford Site. Maximum concentrations of phenol were lower than calculated background concentrations, which were based on PQLs. For these reasons, phenol was not carried forward for further analysis.

Diethylphthalate, di-n-butylphthalate – Phthalates are plasticizers that are frequently encountered in environmental samples as the result of plastics used in the collection and analysis of samples. Di-n-butylphthalate was detected in a single sediment sample. Diethylphthalate was not detected; maximum values are based on detection limits. Diethylphthalate maximums were lower than upriver background concentrations, while di-n-butylphthalate maximum concentrations were the same as average background concentrations. Both were present in both upriver and Hanford Site samples. For these reasons, these phthalates were not carried forward for further evaluation.

Europium-152 – The average europium-152 concentration in upriver samples was calculated as 2,934 pCi/g. Highest concentrations of europium-152 were reported above the Ice Harbor Dam. Therefore, this analyte was not retained for further evaluation.

5.1.2.2 Surface Water Compounds Eliminated by Background Comparison. In this evaluation, the upriver (background) concentration is compared to surface water results from below the Vernita Bridge or other non-Hanford Site sources (e.g., irrigation returns, other rivers); if the concentration is greatest upriver, the analyte was not retained for further evaluation and is shown in bold text in Table 5-6. Pesticides were the only analytes not retained when surface water concentrations were compared to background concentrations.

Pesticides – Dichlorodiphenyldichloroethane, dichlorodiphenyldichloroethene, dichlorodiphenyltrichloroethane, and dieldrin were all reported above human health criteria.

However, these detections were reported at irrigation returns and the Walla Walla River and are therefore not Hanford Site related. These analytes were not retained for further evaluation.

5.1.3 Laboratory Contaminants

Some compounds, including common alcohols and solvents, are used in the preservation, extraction, or analysis of environmental media and are therefore frequently detected in low levels as artifacts in environmental samples. Depending on where they are used in the process, they may also be detected in the laboratory blanks associated with the sample. In accordance with EPA data validation guidance (EPA 1999), common laboratory solvents may be removed from the analysis unless present at high concentrations.

Bis(2-ethylhexyl)phthalate – This compound is a constituent of plastics and is a common sampling and/or laboratory artifact as the result of plastics used in sample collection and analysis. It was detected in both surface water and sediment samples and was present in many background samples. It is believed to be an artifact of sample collection and/or analyses and has therefore been removed from further consideration.

5.1.4 Frequency of Exceedance of Benchmarks

Compounds remaining after a consideration of benchmarks, background, and laboratory contaminants were evaluated with regard to the frequency at which they exceed the lowest benchmark. Compounds that are only rarely detected generally reflect a low potential for effect, unless present at very high concentrations. For this reason, analytes that exceed either ecological or human health risk criteria in 5% or fewer of samples were not retained for further evaluation in this study. Specifically, compounds detected in 5% or fewer of samples that exceed either ecological or human health were not retained for further consideration. For the purposes of this evaluation, PQLs were considered to be the same as detections when considering frequency of exceedance. Analytes that exceeded either ecological or human health risk screening criteria in 5% or fewer of the samples were then evaluated relative to maximum concentration and spatial distribution. The spatial distribution of analytes with <5% exceedance of screening criteria was plotted to evaluate spatial distribution. If these samples were focused in one location, then the analyte was retained for further evaluation. In addition, maximum concentrations of analytes with <5% exceedance of screening criteria were compared to screening criteria. If the maximum reported concentration was an order of magnitude greater than screening criteria, the analyte was retained as a potential data gap. The following provides a short discussion of those analytes that were not retained.

5.1.4.1 Sediment Compounds Eliminated by Frequency of Exceedance. Table 5-7 presents a summary of Site Analytes for sediments compared to frequency at which samples exceed applicable ecological or human health criteria. Site Analytes are presented in the first column, and the next column indicates if there is a low frequency of detection above the screening criteria. In general, if the percentage of samples that exceed the risk-based criteria is below 5%, the analyte was not retained for further evaluation and is shown in bold text in the third column in Table 5-7. Frequency of detections above the screening criteria are shown in Table 5-1. The following provides a short discussion of those analytes that were not retained.

Manganese – Manganese was reported in only 1 of 165 samples (<1%) above the ecological screening criteria of 1,800 mg/kg (Ecology 1997). Manganese was also reported in only 1 of 165 samples (<1%) above the human health screening criteria of 1,762 mg/kg (EPA 2004b).

Based on the number of samples collected and the low frequency of detection above the screening criteria, this analyte was not retained for further evaluation.

Mercury – Mercury was analyzed in 310 samples, but only exceeded the lowest benchmark of 0.41 mg/kg (Ecology 1997) in a single sample. This single sample exceeded the benchmark by less than a factor of two. Because this single, relatively low exceedance is not reflective of a potential risk or contaminant "hot spot," mercury was not retained for further analysis.

Pentachlorophenol – Actual detected concentrations (not PQLs) of pentachlorophenol exceeded the lowest benchmark of 0.017 mg/kg (ODEQ 2001) in 4 of 69 samples collected. While this exceedance rate of 5.8% slightly exceeds the 5% criteria for this evaluation step, pentachlorophenol is a widely used wood preservative that has multiple potential sources, including wood used in marine structures. It was thus not retained as a Site Analyte.

Cesium-137 – Concentrations of cesium-137 were reported above the human health screening criteria of 6.2 pCi/g (WCH-64) in only 4 of 882 samples (<0.5%). (Note: These samples were collected from cores in 1976, and the concentrations decayed to the present day would be below the human health criteria.) Cesium-137 concentrations did not exceed the ecological benchmark of 3,120 pCi/g (ANL 2006) in any of the samples. Therefore, this analyte was not retained in this step. However, as described in Section 5.1.4.3, this compound was retained as a Site Analytes for other reasons.

Strontium-90 - Strontium-90 was reported in only 1 of 505 samples (<1%) above the human health screening criteria of 4.5 pCi/g (EPA 2000). Based on the number of samples collected and the low frequency of detection above the screening criteria, this analyte was not retained for further evaluation.

5.1.4.2 Surface Water Compounds Eliminated Based on Frequency of Exceedance.
Table 5-8 presents a summary of compounds in surface water compared to the frequency at which samples exceeded applicable ecological or human health criteria. Site Analytes are presented in the first column, and the next column indicates if there is a low frequency of detection above the screening criteria. Generally, if the percentage of samples that exceeded the risk-based criteria was below 5%, the analyte was not retained for further evaluation and is shown in bold text in the third column on the table. The following provides a short discussion of those analytes that were not retained.

Antimony – Antimony was reported in only 1 of 1,482 samples (<1%) above the human health screening criteria of 0.0056 mg/L (NRWQC). Based on the number of samples collected and the low frequency of exceedance, this analyte was not retained for further evaluation.

Beryllium – Beryllium was reported in only 5 of 1,484 samples (<1%) above the ecological screening criteria of 0.00066 mg/L (Suter and Tsao 1996). Based on the number of samples collected and the low frequency of exceedance, this analyte was not retained for further evaluation.

Cadmium – Cadmium was reported in only 22 of 1,459 samples (<2%) above the ecological screening criteria of 0.00025 mg/L (EPA 2006). Cadmium was also reported in 2 of 1,459 samples (<1%) above the human health screening criteria of 0.0018 mg/L (EPA 2007b). Based on the number of samples collected and the low frequency of detection above the screening criteria, this analyte was not retained for further evaluation.

Copper – Copper was reported in 14 of 1,499 samples (<1%) above the ecological screening criteria of 0.009 mg/L (EPA 2006). Based on the number of samples collected and the low frequency of detection above the screening criteria, this analyte was not retained for further evaluation.

Lead – Lead was reported in 25 of 1,381 samples (<1%) above the ecological screening criteria of 0.0025 mg/L (Ecology 2006). Lead was also reported in 7 of 1,381 samples (<1%) above the human health screening criteria of 0.015 mg/L (MCL). Based on the number of samples collected and the low frequency of exceedance, this analyte was not retained for further evaluation.

Mercury – Mercury was reported in 9 of 610 samples (2%) above the ecological screening criteria of 0.000012 mg/L (Ecology 2006). Based on the number of samples collected and the low frequency of detection above the screening criteria, this analyte was not retained for further evaluation.

Selenium – Selenium was reported in 1 of 1,367 samples (<1%) above the ecological screening criteria of 0.005 mg/L (Ecology 2006). Based on the number of samples collected and the low frequency of detection above the screening criteria, this analyte was not retained for further evaluation.

Silver – Silver was reported in 5 of 1,503 samples (<1%) above the ecological screening criteria of 0.00036 mg/L (Suter and Tsao 1996). Based on the number of samples collected and the low frequency of exceedance, this analyte was not retained for further evaluation.

Thallium – Thallium was reported in 5 of 1,277 samples (<1%) above the human health screening criteria of 0.00024 mg/L (NRWQC). Based on the number of samples collected and the low frequency of detection above the screening criteria, this analyte was not retained for further evaluation.

Vanadium – Vanadium was reported in only 5 of 158 samples (3%) above the ecological screening criteria of 0.02 mg/L (Suter and Tsao 1996). Vanadium was also reported in 3 of 158 samples (2%) above the human health screening criteria of 0.036 mg/L (EPA 2004b). Based on the number of samples collected and the low frequency of detection above the screening criteria, this analyte was not retained for further evaluation.

Zinc – Zinc was reported in 12 of 1,500 samples (<1%) above the ecological screening criteria of 0.105 mg/L (Ecology 2006). Based on the number of samples collected and the low frequency of detection above the screening criteria, this analyte was not retained for further evaluation.

Carbon Tetrachloride – Carbon tetrachloride was reported in 1 of 163 samples (<1%) above the human health screening criteria of 0.0001713 mg/L (EPA 2004b). Based on the number of samples collected and the low frequency of detection above the screening criteria, this analyte was not retained for further evaluation.

PCE – PCE was reported in 1 of 164 samples (<1%) above the human health screening criteria of 0.000104 mg/L (EPA 2004b). Based on the number of samples collected and the low frequency of detection above the screening criteria, this analyte was not retained for further evaluation.

5.1.4.3 Additional Considerations for Site Analyte Selection. Additional considerations focused on biota and groundwater in regard to two categories of compounds: PCBs and other compounds. These are discussed below. In addition, VOCs detected in low concentrations were also evaluated in regard to detection location and other factors.

PCBs in Biota: While biota data were not systematically evaluated in this Data Gap Analysis, they were available for general review and consideration. To date, nearly all PCB analyses completed on sediment and surface water in the vicinity of the Hanford Site have been nondetect. However, PCBs have been detected in fish tissue throughout the Columbia River Basin including a limited number from the Hanford Reach. The following describes potential issues associated with fish tissue analytical results.

Analyses of fish from the Hanford Reach of the Columbia River have shown variability in concentrations of organic compounds. The variability may be a function of, but is not limited to, the species of fish, pharmacodynamic interaction of the fish and the compound, changes in the available concentration in the media, age of the fish, temperature of the water, and physical characteristics of the matrix with which the compound is associated.

The organic compounds that are typically analyzed for and contribute to the body burden of the fish come from many sources that may differ in concentration. Each source may also have temporal and spatial changes in concentration that may be due to changes in instream flow, surface water runoff, type of irrigation and return, and surrounding farm practices.

The exposure to the compound and its subsequent uptake also depend on the life stage of the fish and its feeding and reproductive cycles, as well as its life expectancy. The abundance of food and the fat content of the fish are also important factors in the development of a body burden.

The matrix that is associated with the compound will also determine whether and how much of it is available to the fish. The water column, sediment, and type of food will all contribute differently to the level of bioavailability of the compound.

The number of parameters that contribute to the variability of the compound in the fish is large and ill defined. One method that is used to evaluate such data sets is a statistically based comparison. The large number of variables and the unknown sensitivity of each one narrows the way in which meaningful comparisons can be made. To determine if differences exist between fish in certain locations in the river or among fish in different river systems, enough samples must be taken and analyzed to provide confidence that the analytical results are truly different. The hypotheses of difference can be statistically evaluated at a standard or some other practical confidence level.

In the studies examined, none has reported or provided sufficient data to determine with a statistically valid method if populations of fish in Hanford Reach differ in concentrations of organic chemicals from fish in other locations. Data are available for fish from the Hanford Reach, but comparable data for other locations have not been found in sufficient quantity to make a meaningful comparison.

DOE has recently agreed to conduct additional PCB congener analysis along the Hanford Reach as part of the 100/300 Areas and Inter-Area investigations. The need for additional PCB analysis will be revised during the DQO process, once the additional sampling results are available.

Other Compounds in Biota and Sediment: To evaluate whether additional compounds should be considered, the compounds detected in both Hanford Site groundwater and river biota were reviewed. Of these two data sets, the groundwater data were considered to be the more relevant because groundwater discharges directly to river media and reflect only constituents present at the Hanford Site. With the general exception of agricultural pesticides and laboratory solvents, all compounds in groundwater were also detected in sediment or surface water, and were therefore adequately accounted for in the selection process for Site Analytes. No compounds were thus added to the Site Analyte list as the result of groundwater data. Current concentrations of site-related COPCs in groundwater are expected to decrease over time; however the future nature and distribution of site groundwater contaminants is currently under review by other projects.

Biota data included a wide variety of compounds that far exceed detected compounds in other media at the site. Since biota can reflect constituents from potentially any upriver source on the Columbia River, this list was reviewed to determine if any Hanford Site-related compounds were present. This review was conducted by comparing detected biota compounds with potentially Site-related compounds identified in Appendix D of the *DQO Summary Report for the 100 Area and 300 Area Component of the RCBRA* (BHI-01757). This appendix summarized the results of an investigation of Hanford Site processes that was conducted to identify common industrial compounds that were used at the site. None of the potential Hanford Site organic compounds identified in Appendix D were detected in biota, and nearly all radionuclides, site-related or not, that were present in biota were also present in sediment. Because site-related compounds would enter river biota through either sediment or surface water, the evaluation of sediment and surface water compounds in the Site Analytes selection process is considered to adequately represent site-related constituents in biota as well. No compounds were thus added to the Site Analyte list as the result of biota data.

4-Methyl-2-pentanone, 2-Hexanone, Xylenes: These compounds are ubiquitous in the environment and were not analyzed for in background samples. As VOCs, they typically do not persist in sediments unless present at high concentrations and therefore reflect relatively recent contributions. These constituents were detected only in areas south of the Hanford Site (Map Views D and E), likely reflecting the urban and industrial use in that area. Because these constituents are not representative of historical Hanford Site discharges and were present primarily south of the site, they were not retained as Site Analytes in sediment.

Cesium-137: Cesium-137 was eliminated in Section 5.1.4.1 because of a very low (<1%) frequency of exceedance. However, because this compound emerged as a human health risk driver in the 100/300 Area RCBRA it was retained as a Site Analyte in this Data Gap Analysis.

Potassium-40, Thorium-232: As part of the ongoing 100/300 Area RCBRA reviews, potassium-40 and the isotopes of thorium were determined to not arise from Hanford Site operations and therefore were eliminated from consideration in that study. In consequence, they will not be carried forward as Site Analytes in this Data Gap Analysis.

5.1.5 Final Site Analyte List

As discussed above, the Final Site Analyte list was developed by comparing maximum concentrations to ecological and human health risk screening criteria. Compounds that exceeded these criteria were further evaluated by a comparison to background concentrations, common laboratory contaminants, frequency of exceedance of screening criteria, and then

comparing the frequency of exceedance with the number of samples analyzed for each analyte. The results of this process are summarized in Tables 5-9 and 5-10.

This process is not intended to limit any future sampling scope or effort, but simply allows some focus to those analytes that are under-represented in the data set or demonstrate a potential risk to biota or human health. Actual numbers of samples and locations will be developed during the DQO process.

Table 5-11 presents the final Site Analyte list for sediments, and Table 5-12 presents the final Site Analyte list for surface water. These compounds were subject to detailed mapping and data gap analysis, as described in the following section.

5.2 EVALUATION OF SITE ANALYTES

As described in Section 2.0, each of the Site Analytes was subject to a detailed evaluation of its specific nature and distribution in the Hanford Reach to determine if additional sample locations or analyses were necessary. Additional samples may be necessary for a variety of reasons, including insufficient number near a source area, PQLs that exceed benchmarks, insufficient number in a known downstream depositional area, or similar considerations. This section presents the results of that analysis.

This analysis is conducted visually, by plotting data on individual maps of the river. Figure 5-1 and Figure 5-2 show the sediment and surface water sample locations, respectively, from the Primary Study Area. To obtain sufficient detail for assessment, the Study Area was divided into eight map "views", consisting of Views A, B1, B2, B3, B4, C, D, and E. These maps ranged from View A, encompassing the upriver “background” sample locations around Priest Rapids Dam, to View E, showing the lower reach around the McNary Dam. Maps are included in Appendix C. To facilitate tracking the distribution of a contaminant over distance, maps are grouped by medium and analytical category (organics, metals, and radionuclides) so that, for instance, the presence of a particular organic compound can be followed from View A down to View E at McNary Dam. However, if no exceedance occurred in a particular View reach, no map was generated. Each map includes for each compound the number of criteria exceedances versus the number of samples in the river reach depicted in that view; this comparison illustrates the adequacy of the sample density within the fairly small scales represented by the maps. Each map also shows the presence of key shoreline features that may influence river conditions; these include wetlands, irrigation inputs, reactor areas, and nearby open water.

Maps show both the location of all media samples within the river reach shown by each map View, as well as the locations of samples that exceed a risk-based criteria. Sample locations that are included in current investigations as part of the 100/300 Area RCBRA or the Inter-Areas Study are distinguished by symbol from those in the main channel of the river (denoted as the CRC database), which are the primary focus of this Data Gap Analysis.

To support the maps, data tables for each map package are included in Appendix D showing analytical data for each of the samples exceeding criteria, as shown on the maps. These tables show both the detected value or PQL as well as the relevant human health and ecological benchmarks. Many of the "exceedances" shown on the maps actually reflect PQLs, and so have a very high level of uncertainty associated with them, since the compound may not have been present at all.

This section presents an analysis of each of the five map sets. A summary of the data gaps derived from this review and the spatial and temporal analysis of Section 4.0 is presented in Section 6.0.

5.2.1 Sediment Data Gap Evaluation

Sediment Site Analytes included primarily metals and radionuclides; the only organic compounds identified are PCB congeners, which will be evaluated for data gaps during the DQO process rather than in this report (Section 5.1.4.3). Thus, no map package for sediment organics was produced. Unlike surface water, sediment can bind to and accumulate some constituents, and can therefore reflect both recent and historical releases. However, due to the variability in flow in the river, long-term accumulation of the sediment itself is unlikely in many areas. The distribution of metals and radionuclides in sediment is illustrated in Map Packages 1 and 4, respectively.

5.2.1.1 Metals in Sediment. Metals are a natural component of most sediments and tend to associate with the fine-grained fraction because of the relatively larger surface area and slightly charged surface of clay minerals and organic matter. Because of their ability to retain many inorganics, fine-grain sediments can reflect both recent and historical contributions.

Site Analytes for sediment consist of antimony, arsenic, barium, chromium, selenium and vanadium. As described in Section 2.0, these compounds exceeded the lowest risk-based standard in at least one sample in the Primary Study Area. Exceedances were based on actual detected values, not PQLs. Details of metals sample locations, as well as locations where detected concentrations exceeded criteria, are shown in Map Package 1. Tables showing benchmark exceedances for each map are included in Appendix D. Metals exceedances were detected throughout the Primary Study Area, so all eight maps (Views A, B1, B2, B3, B4, C, D, and E) are included in the map package. Results for each map are discussed below.

- View A: As shown by View A, arsenic and chromium exceeded criteria most frequently at locations behind Priest Rapids Dam, and barium and antimony exist above criteria primarily near the Vernita Bridge. The number of samples per analyte ranged from 22 to 56. With the exception of two samples behind Priest Rapids Dam, the mapped selenium exceedances were based on PQLs; no selenium was actually detected.

- View B1 – Near-shore: Chromium and barium exceeded benchmarks most frequently in both springs and near outfalls in front of the 100-B/C Area, and chromium also exceeded criteria in front of the 100-K Area. Selenium was detected slightly above benchmarks in a spring at 100 B/C Area and at 100-K Area; other mapped “exceedances” reflect PQLs over criteria, not detected values. Thirty-one near-shore samples exist in this area, suggesting that the longitudinal extent has been sufficiently characterized.

- View B1 – Channel: No samples are present on the island downriver of the 100-B/C Area (Coyote Island) or on the left-hand shore in this area or immediately downriver of the 100-K Area.

- View B2 – Near-shore: Several metals showed a single exceedance (5 for antimony) but were present at concentrations close to (within a factor of three, typically) applicable benchmarks. Map B-2 shows occasional “exceedances” of selenium, but with one

exception (B07ND0, with a selenium concentration slightly above criteria) these exceedances were based on PQLs, not detected values. The presence of samples in between areas of detected concentrations suggests that this area has been adequately characterized.

- View B2 – Channel: Sampling has been conducted on the downstream depositional areas of Island D, and slight exceedances (less than a factor of three) of antimony were detected in these samples, and also in a sample from downriver islands in the Horn Area. Selenium was not detected, but selenium PQLs exceeded criteria. No samples were collected on the left side of the river near the Saddle Mountain Wasteway.

- View B3 – Near-shore: Chromium and arsenic, and to a lesser extent selenium, most frequently exceeded criteria in sediment near the springs and sloughs near the 100-H Area, White Bluffs Townsite, and 100-F Area. Both arsenic and chromium exceed only the conservative human health benchmarks, which are based on soil exposures (Section 2.5.2), but not ecological benchmarks.

- View B3 – Channel: One sample (4434246) was collected from the left side of the river and the PQL for selenium in this sample exceeded benchmarks. A sediment boring was collected between 100-H Area and the island, and showed no exceedances. No samples have been collected from the left shore across from the White Bluff Townsite or 100-F Area, or from the islands opposite or downgradient from 100-H or 100-F Areas.

- View B4 – Near-shore: Antimony, arsenic, and chromium most frequently exceeded criteria in sediment in the sloughs and spring areas downgradient of the 100-F Area and near the Hanford Townsite. Antimony and chromium concentrations exceeded criteria by less than a factor of 3, and arsenic exceeded only human health criteria.

- View B4 – Channel: Islands downriver of the 100-F Area sloughs have not been sampled, nor has the left shore downriver of the Hanford Townsite slough. Three samples have been collected from the channel north of the Hanford Townsite: one (a boring) had no exceedances; one (PEW-1Sed, at an irrigation return) exceeded for chromium, vanadium, and barium; and a third, from the left hand shore across from the Hanford Townsite slightly exceeded for antimony, which also exceeds in the 100-F Area sloughs upriver. No samples exist on the left shore downriver of the 100-F Area, except sample PEW-1sed, which may reflect constituents in the irrigation return water. No sample exists on the small island downriver of the Hanford Townsite exceedances.

- View C – Near-shore: View C shows primarily chromium and arsenic exceedances in the vicinity of a spring (Spring 28-2) at the north end of the View, and then again at the vicinity of Spring 42-2 in the 300 Area. Arsenic also exceeded criteria in operational areas of the 300 Area. Barium, antimony, and vanadium also exceeded criteria in two to four samples each. Selenium exceeded criteria in a single sample in the 300 Area; PQLs exceeded benchmarks at other locations.

- View C – Channel: Three sample locations exist along the left-hand shore in this reach, and no detected concentrations exceeded benchmarks; mapped selenium exceedances reflect PQLs, not detected values. This reach also includes Ringold Springs, a Washington State Department of Fish and Wildlife hatchery for spring chinook and salmon. No samples are present on the islands downriver of Spring 28-2 or downriver from the 300 Area.

- View D: View D shows continued exceedances of arsenic, and at some locations chromium in sediment, at downriver locations and on the Snake River. With one exception, mapped selenium exceedances were all due to PQLs, not detected values. Concentrations of arsenic at most locations were very close to background concentrations (within 1 to 2 mg/kg). Samples collected in the Richland area exceeded criteria for arsenic and chromium, but none were collected in near-shore areas of potential human exposures. All chromium exceedances were of human health criteria, and values exceeded benchmarks by less than a factor of three. Several samples exist downriver, most of which have no exceedances or only exceed for antimony.

- View E: This view shows primarily the steep-sided, narrow portion of Lake Wallula, behind McNary Dam. Numerous samples have been collected at the upstream portion, near the Walla Walla River, and immediately behind the McNary Dam. No samples exist in between. Since some sedimentation is likely in this area, the lack of samples may be a data gap.

Summary - The sediment sampling in the Primary Study Area shows the presence of arsenic and chromium at near-shore locations throughout the reach, primarily present in and around springs and sloughs. However, limited sampling in the channel and downriver islands has been conducted. Several irrigation returns enter the river in this reach.

Potential Data Gaps - Based on this assessment, data gaps appear to exist for sediment metals samples, particularly arsenic and chromium, in channel and island areas downgradient of sources. Specific areas include the following:

- Islands downriver of 100-B/C Area, 100-F Area, the Hanford Townsite, Spring 28-2, 300 Area, and opposite the 100-H Area.

- Left-shore locations downriver of the 100-B/C Area and 100-K Area, White Bluffs Townsite, 100-F Area, and the Hanford Townsite.

- Several irrigation returns throughout the reach, particularly the Saddle Mountain wasteway.

- Near-shore areas in the Richland area.

- Mid-channel sections of Lake Wallula.

5.2.1.2 Radionuclides in Sediment. Radionuclides included on the Site Analytes list consist of cesium-137, cobalt-60, uranium-234, and uranium-238. Detailed maps of the distribution of radionuclide sample results are included in Map Package 4 in Appendix C. Tables showing benchmark exceedances for each map are included in Appendix D. Activity levels exceeding criteria were detected throughout the Primary Study Area, so Maps A, B1, B2, B3, B4, C, D, and E are included in the map package.

- View A: View A shows the exceedances of uranium-234 and uranium-238 in locations upstream of the Priest Rapids Dam, but not at locations downstream, suggesting that this constituent is not passing by the dam in appreciable quantities.

- View B1 – Near-shore: Extensive sampling, consisting of between 21 and 31 samples per analyte, has been conducted in this area. Uranium-238 exceeded criteria in three spring

samples at the 100-B/C and 100-K Areas, plus one additional sample from 100-K. Sampling in between these sampling points showed no exceedances. Uranium-234 exceeded criteria at a single sediment sample at the 100-K Area.

- View B1 – Channel: No samples for radionuclides have been collected in the middle of the channel or the island (Coyote Island) downriver of the spring at 100-B/C Area. However, near-shore areas have been sampled, and except for a few locations described above, concentrations were below criteria. Since near-shore areas are expected to have the highest concentrations of radionuclides, the lack of exceedances along the shoreline suggests a low potential for exceedances in other areas beyond the 100-B/C Area.

- View B2 – Near-shore: Uranium 234 exceeded benchmarks in two samples from the 100-N Area, and the Horn area. Extensive additional sampling in these areas showed no exceedances.

- View B2 – Channel: Sampling has been conducted on the 100-D Island downriver of the reactor area, but no contaminants exceeded benchmark values. Because the near-shore area in this reach was sampled in numerous locations and showed few exceedances, little potential exists for exceedances in other parts of the channel.

- View B3 – Near-shore: Uranium-234 and uranium-238 were detected above criteria in sloughs associated with the White Bluffs Townsite and to a minor extent in 100-F and 100-H Area sloughs.

- View B3 – Channel: Islands downstream of the exceedances at the adjacent White Bluffs Townsite and 100-F Area have not been sampled.

- View B4 - Near shore: Uranium-234 and uranium-238 were detected above criteria in multiple locations in the springs and sloughs associated with the 100-F Area and in the Hanford slough at the Hanford Townsite.

- View B4 - Channel: The channel and island downstream of the Hanford Townsite have not been sampled, but the samples at the Hanford Townsite were sampled and had no exceedances, suggesting that further sampling around the Townsite is unnecessary.

- View C – Near-shore: Uranium-234 and uranium-238 were most frequently detected in this reach at the location of Spring 28-2 at the north end of the reach and down in the 300 Area, as the result of contributions from both Spring 42-2 and various operational activities. Two radionuclide sampling locations exist between these locations, but the uranium-238 PQLs exceeded criteria. The 300 Area contained both the highest number of uranium exceedances as well as the highest detected value for uranium in sediment, which was 11.3 pCi/g from downriver of Spring 42-2.

- View C – Channel: No usable radionuclide sampling has been conducted in the reach between Spring 28-2 and the 300 Area, a reach which contains several islands. Samples collected from the near-shore area in the middle of this reach had PQLs exceeding criteria. No radiological samples have been collected from the island opposite and downstream of the 300 Area.

- View D: Uranium-234 and uranium-238 exceeded criteria in samples from Richland and below the Ice Harbor Dam. Concentrations in samples from both of these locations were similar. No sampling has occurred on the island directly south of the 300 Area. Radiological samples have been collected from the same general location in Richland, and these samples typically exceeded criteria. Few radiological samples have been collected from the headwaters of Lake Wallula south of Richland. Cobalt-60 exceeded criteria in samples collected south of the confluence of the Walla Walla River, but did not exceed criteria in any sediment samples from the Hanford Reach.

- View E: Radiological samples have been collected from the north and south sides of Lake Wallula, and from behind McNary Dam. Only cobalt-60 exceeded criteria in the Lake Wallula sample, while cobalt-60, uranium-234, and uranium-238 all exceeded criteria in samples from behind the dam. No samples are present from the center of the lake.

Summary - Extensive radiological sediment sampling has been conducted adjacent to the Hanford Site, and the primary Site Analytes that exceed criteria are uranium-234 and uranium-238. Isolated exceedances occur at most operational areas except for the 100-H and 100-D Areas, and exceedances were also associated with sloughs at the White Bluffs Townsite, 100-F Area, the Hanford Townsite, and the springs at RM 28.2. Highest concentrations and the largest number of samples exceeding criteria were present in the 300 Area. With the exception of 100-D Island, little radiological sampling has occurred on the left shore of the river or in downriver islands.

Potential Data Gaps - Potential data gaps exist due to both the lack of radiological samples in long reaches of the river, and the need for downriver delineation of source areas. Based on the discussions above, potential data gaps, primarily for uranium-234 and uranium-238, exist at the following locations:

- Islands downriver of the exceedances at the 100-B/C Area, White Bluffs Townsite and 100-F Area, and 300 Area

- Additional shoreline areas in Richland, Washington

- Northernmost island downstream of Spring 28-2

- Headwater areas in Lake Wallula

- Mid-channel locations in Lake Wallula.

5.2.2 Surface Water Data Gap Evaluation

Surface water Site Analytes included organics, metals, and radionuclides. Since surface water is a highly transitory medium, concentrations in the river may vary by river flow rate (as controlled by the upstream Priest Rapids Dam) and season; however the data set for surface water is considered to be sufficiently robust to account for this temporal component. Each analytical group (organics, metals, and radionuclides) is discussed separately, below.

5.2.2.1 Metals in Surface Water. As discussed in Section 5.1 above, the following metals were identified as Site Analytes for further evaluation in surface water: aluminum, arsenic, barium, boron, chromium, hexavalent-chromium, iron, manganese, and uranium. These nine

analytes were detected using analytical EPA Method 6010, which reports a long list of elements including those identified Site Analytes. Any additional sampling, if needed, will likely use standard analytical methods and therefore report all analytes and not just those listed above. Site Analytes were detected in both upriver sampling locations, groundwater seeps along the operational areas, and channel surface water sampling locations. These results are presented in Map Package 2 of Appendix C. Map Package 2 includes eight Views (A, B1, B2, B3, B4, C, D, and E) with a corresponding table of results for each view presented in Appendix D.

The maps (Views A, B1, B2, B3, B4, C, D and E) for metals in surface water show analyte exceedances or locations where the PQL was greater than the applicable risk criteria. The following is a description of metals in surface water:

- View A: Arsenic, boron, and barium were detected above PQLs and corresponding human health and/or ecological risk screening criteria. No uranium concentrations were reported above the PQL (0.0206 mg/L), which is greater than the corresponding ecological screening criteria (0.0026 mg/L).

- View B1 – Near-shore: Aluminum, arsenic, and barium were all reported above the PQL and relevant risk screening criteria from the near-shore areas. No chromium or uranium concentrations were reported above their respective PQLs, which are greater than the corresponding screening criteria.

- View B1 – Channel: No surface water samples have been collected from the channel portion of this reach. The presence of near-shore samples below 100-B/C Area with no exceedances suggest that the surface water has been delineated in this area. Channel samples relevant to 100-K Area are described under View B2.

- View B2 – Near-shore: Aluminum, arsenic, barium, boron, chromium, hexavalent-chromium, iron, and manganese were all reported above the PQL and relevant risk screening criteria from the near-shore areas. Uranium was reported as non-detects below the PQL, which was higher than the relevant benchmark.

- View B2 – Channel: Only arsenic and barium were reported within the channel above the PQL and relevant risk screening criteria. Uranium PQLs were above criteria. A transect of surface water samples was collected downriver from the 100-N Area, providing good lateral representation of surface water in this area. Detected arsenic in the transect samples was consistent with background concentrations.

- View B3 – Near-shore: Aluminum, arsenic, barium, chromium, hexavalent-chromium, iron, and manganese were all reported above the PQL and relevant risk screening criteria from the near-shore areas.

- View B3 – Channel: A transect of samples was collected across the river at the 100-F Area. Only arsenic was reported above the PQL and relevant risk screening criteria. However, detected arsenic surface water concentrations were similar to background concentrations.

- View B4 – Near-shore: Arsenic, barium, and hexavalent-chromium were all reported above the PQL and relevant risk screening criteria in the near-shore areas. Aluminum PQLs exceeded criteria, but aluminum was not detected in any sample. Arsenic was the most

frequently detected metal, but concentrations in samples other than those collected in the slough areas were similar to background.

- View B4 – Channel: Surface water was not sampled in the channel in this reach. All near-shore samples collected from the river contained only exceedances for arsenic, which was present at concentrations similar to background, so no exceedances of metals further out in the channel is expected.

- View C – Near-shore: Aluminum, arsenic, barium, and boron were reported above the PQL and relevant risk screening criteria from the near-shore areas. Uranium was reported above the PQL in groundwater discharging from a 300 Area seep (0.0442 mg/l and 0.0339 mg/l at Spring 42-2 in 2005).

- View C – Channel: Only arsenic and uranium were reported within the channel above the PQL and relevant risk screening criteria. Uranium from the Ringold Wasteway was reported above the PQL and screening criteria.

- View D: Numerous arsenic detections were reported in surface water from a sampling location near the Richland Pump House. Barium and chromium concentrations were reported below the PQL at the pump house. Arsenic was reported above the PQL and risk screening criteria on the Yakima and Snake Rivers, and from the Esquatzel Coulee Wasteway.

- View E: Arsenic was reported above the PQL and risk screening criteria at the mouth of the Walla Walla River and near McNary Dam.

Summary – As shown on the figures and table, arsenic is present throughout the entire Study Area. Concentrations increase slightly along the Hanford Reach suggesting a potential contribution from the Hanford Site. The majority of the results for metals in surface water originate from groundwater seeps located in the 100/300 Operational Areas. Channel surface water generally contains a smaller number of these contaminants at lower concentrations, demonstrating that the major source of metals to the river is the groundwater discharge. There are two sources of uranium to the river: groundwater seeps along the 300 Area and the irrigation returns on the left side of the river. The most significant flux of uranium to the river is the 300 Area seep (Spring 42-2).

Arsenic was reported above the PQL and human health screening criteria at the Richland Pump House on numerous events. Arsenic was also reported on the Yakima, Snake, Walla Walla Rivers, the irrigation returns, and at McNary Dam.

Possible Data Gaps - Metals in surface water in the vicinity of the Richland Pump House is a possible data gap.

5.2.2.2 Radionuclides in Surface Water. As discussed in Section 5.1 above, the following four radionuclide Site Analytes were identified for further evaluation in surface water: strontium-90, tritium, uranium-234, and uranium-238. These analytes were not detected in upriver surface water sampling locations and are restricted to groundwater seeps from the near-shore areas. These results are presented in Map Package 5 of Appendix C. Map Package 5 includes four Views (B1, B2, B3, and C) with a corresponding table of results for

each view included in Appendix D. Views A, D, and E were not produced because there were no radionuclide exceedances in surface water from these areas.

The maps (Views B1, B2, B3, and C) for radionuclides in surface water show analyte exceedances or locations where the PQL was greater than the applicable risk criteria. The following is a description of radionuclides in surface water.

- View A: There were no radionuclide Site Analyte exceedances identified in the upriver areas, and therefore no map was included for View A.
- View B1 – Near-Shore: Only tritium in a single sample exceeded benchmarks in this reach.
- View B1 – Channel: No radionuclide Site Analytes were identified in the river.
- View B2 – Near-Shore: Strontium-90 and uranium-238 were detected in the seeps and springs associated with the 100-K and 100-N Areas at very low frequencies of detection: strontium-90 (2/169), and uranium-238 (2/115).
- View B2 – Channel: No radionuclide Site Analytes were identified in the river.
- View B3 – Near-shore: Strontium-90 was detected in surface water associated with the 100-H spring at the southern edge of the 100-H Area, and was reported in 4 of 69 samples.
- View B3 – Channel: No radionuclide Site Analytes were identified in the river.
- View B4: There were no radionuclide Site Analyte exceedances identified in this reach, and therefore no map was included for View B4.
- View C – Near-shore: Tritium, uranium-234, and uranium-238 were detected in the seeps and springs associated with Spring 28-2 and the 300 Area, and had low frequencies of detection: tritium (20/393), uranium-234 (23/247) and uranium-238 (26/250).
- View C – Channel: No radionuclide Site Analytes were identified in the river.
- View D: There were no radionuclide Site Analyte exceedances identified in this area, and therefore no map was included for View D.
- View E: There were no radionuclide Site Analyte exceedances identified in this area, and therefore no map was included for View E.

Summary – As shown on the figures in Map Package 5 (Appendix C) and the tables in Appendix D, there were very few detections of radionuclide Site Analytes reported from the Primary Study Area; of these limited detections, all were associated with groundwater seeps, and none were reported from the river channel.

Possible Data Gaps – While no radionuclides were reported in the river channel, continued sampling of the groundwater and/or seeps through current 100/300 Areas and Inter-Area RI/FS investigations and the SESP monitoring program should meet the requirements of this potential data gap.

5.2.2.3 Organics in Surface Water. As discussed above, four organic Site Analytes (1,1,2-TCA, 1,2-DCA, chloroform, and TCE) were identified for further evaluation in surface water. These four analytes belong to a class of compounds generally referred to as VOCs. The analytical method used for VOC analysis is EPA Method 8260, which reports a standard list of over 100 compounds including the four Site Analytes above. Any additional sampling, if needed, will likely use standard analytical methods and therefore report all analytes and not just those listed above. These analytes were detected in groundwater as well as surface water, so were included as Site Analytes. These constituents are presented in Map Package 3 of Appendix C. Map Package 3 includes seven views (A, B1, B2, B3, B4, C, and D) with a corresponding table of results for each view included in Appendix D. View E was not produced because there were no organic exceedances in surface water from this area.

The maps (Views A, B1, B2, B3, B4, C, and D) for organics in surface water show analyte exceedances (where detected concentrations exceeded criteria) or locations where the PQL was greater than the applicable risk criteria. The following is a description of organics in surface water. No VOCs were sampled in the channel portion of the river, so only near-shore areas are described.

- View A: No organics were reported above the PQL; mapped exceedances reflect PQLs, not detected concentrations.

- View B1: 1,1,2-TCA , 1,2-DCA, chloroform, and TCE were reported above the human health screening criteria in a limited number of seeps from the 100-K and 100-B Areas.

- View B2: Chloroform was the only VOC detected in this reach, and was present in a single seep sample at a concentration above the human health risk criteria.

- View B3: 1,1,2-TCA , 1,1,2-DCA, and chloroform were detected in the same sample of groundwater from a 100-F Area seep.

- View B4: 1,1,2-TCA , 1,2-DCA, and chloroform were detected in two samples from a spring downgradient of the 100-F Area.

- View C: 1,1,2-TCA , 1,2-DCA, chloroform, and TCE were reported above the human health screening criteria around Spring 42-2 in the 300 Area.

- View D: 1,1,2-TCA, 1,2-DCA, chloroform, and TCE were reported above the detection limit in surface water from a sampling location near the Richland Pump House.

- View E: There were no Site Analyte exceedances for organics identified in this area, and therefore no map was included for View E.

Summary - The majority of the results for organics in surface water were reported as non-detects. Limited low level VOCs were reported from a few groundwater seeps located in the 100-K, 100-B, 100-F, and 300 Areas. This indicates a low level of VOC contamination in groundwater discharging to the river via seeps. All seep locations are currently being investigated and evaluated under the 100/300 Area and Inter-Areas risk evaluations and SESP Project and, therefore, are not directly relevant to this study. The only exceedances reported in river water in the Primary Study Area were from samples adjacent to the Richland Pump House.

Possible Data Gaps - Continued surface water sampling for VOCs in the vicinity of the Richland Pump House is a possible data need.

As discussed in Section 1.0, further evaluation of these preliminary data gaps will occur as part of the DQO process that will follow this report.

Figure 5-1. Sediment Sample Locations Primary Study Area.

(For a full size version of this figure please see the CD at the end of this document. If a printed version is needed please contact WCH Publications at (509) 372-9938.)

Figure 5-2. Surface Water Sample Locations Primary Study Area.

(For a full size version of this figure please see the CD at the end of this document. If a printed version is needed please contact WCH Publications at (509) 372-9938.)

Table 5-1. Summary of All Detected Analytes –Sediment. (6 Pages)

Constituent Name	CAS #	Units	Number Analyzed	Number Detected	Frequency of Detection	Minimum Detect	Maximum Detect	Average Concentration	Ecological Benchmark Comparison							Human Health Benchmark Comparison						
									Eco Benchmark Value	Eco Benchmark Source	Is Max > Benchmark?	Factor of Exceedance	Number of Exceedances	Number of Detect Exceedances	% Detects in Exceedances	HH Benchmark Value	HH Benchmark Source	Is Max > Benchmark?	Factor of Exceedance	Number of Exceedances	Number of Detect Exceedances	% Detects in Exceedances
Dioxin																						
1,2,3,4,6,7,8-Heptachlorodibenzodioxin	35822-46-9	mg/kg	44	8	18	5.31E-06	9.15E-05	6.65E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	mg/kg	44	1	2	5.67E-06	5.67E-06	2.55E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,3,7,8-Dioxin Total Equivalents	2378-DioxinTE	mg/kg	44	44	100	0.0	1.08E-06	7.25E-08	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,3,7,8-Tetachlorodibenzofuran	51207-31-9	mg/kg	44	3	7	1.09E-06	1.69E-06	7.26E-07	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Octachlorodibenzofuran	39001-02-0	mg/kg	44	1	2	3.94E-05	3.94E-05	5.81E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Octachlorodibenzo-p-dioxin	3268-87-9	mg/kg	44	25	57	1.18E-05	0.00101	5.68E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Herbicide																						
Pentachlorophenol	87-86-5	mg/kg	69	7	10	0.013	1.2	0.48	0.017	ODEQ 2001	Yes	70.6	64	4	6	2.98	Region 9 PRG	No	--	--	--	--
Metals																						
Aluminum	7429-90-5	mg/kg	150	150	100	0.4	72254	8290	14000	Ingersoll 1996	Yes	5.2	6	6	100	76141.95	Region 9 PRG	No	--	--	--	--
Antimony	7440-36-0	mg/kg	256	166	65	0.312	10	1.63	3	Ecology 1997	Yes	3.3	60	19	32	31	EPA SSL	No	--	--	--	--
Arsenic	7440-38-2	mg/kg	327	299	91	0.002	20	5.36	57	Ecology 1997	No	--	--	--	--	0.39	Region 9 PRG	Yes	51.3	310	295	95
Barium	7440-39-3	mg/kg	165	163	99	0.4	1027	143.7	48	ODEQ 2001	Yes	21.4	124	124	100	5374.91	Region 9 PRG	No	--	--	--	--
Beryllium	7440-41-7	mg/kg	291	254	87	0.07	2.38	0.89	--	--	--	--	--	--	--	154.37	Region 9 PRG	No	--	--	--	--
Boron	7440-42-8	mg/kg	39	38	97	0.2	4	1.17	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	7440-43-9	mg/kg	394	324	82	0.07	15	1.90	5.1	Ecology 1997	Yes	2.9	36	36	100	3.9	Region 6	Yes	3.8	54	54	100
Cerium	7440-45-1	mg/kg	2	2	100	53	58	55.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	7440-47-3	mg/kg	365	357	98	3.3	130	36.7	260	Ecology 1997	No	--	--	--	--	30	Region 9 PRG	Yes	4.3	162	162	100
Cobalt	7440-48-4	mg/kg	143	141	99	0.8	20	6.11	50	PERSUAD ET AL., 1993	No	--	--	--	--	902.9	Region 9 PRG	No	--	--	--	--
Copper	7440-50-8	mg/kg	391	390	100	1.2	89.4	23.83	390	Ecology 1997	No	--	--	--	--	3000.0	Washington DOE CLARC	No	--	--	--	--
Iron	7439-89-6	mg/kg	145	145	100	2.2	34000	14598.6	200000	Ingersoll 1996	No	--	--	--	--	23463.2	Region 9 PRG	Yes	1.4	11	11	100
Lanthanum	7439-91-0	mg/kg	2	2	100	28	31	29.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	7439-92-1	mg/kg	362	360	99	1.2	140	26.28	450	Ecology 1997	No	--	--	--	--	250.0	Washington DOE CLARC*	No	--	--	--	--
Lithium	7439-93-2	mg/kg	39	39	100	2.4	26	8.33	--	--	--	--	--	--	--	1564.3	Region 9 PRG	No	--	--	--	--
Manganese	7439-96-5	mg/kg	165	164	99	4	4439	327.6	1800	Ecology 1997	Yes	2.5	1	1	100	1762.4	Region 9 PRG	Yes	2.5	1	1	100
Mercury	7439-97-6	mg/kg	310	197	64	0.0018	0.68	0.05	0.41	Ecology 1997	Yes	1.7	1	1	100	10.0	EPA SSL	No	--	--	--	--
Molybdenum	7439-98-7	mg/kg	92	29	32	0.23	1.2	0.40	--	--	--	--	--	--	--	391.0	Region 9 PRG	No	--	--	--	--
Nickel	7440-02-0	mg/kg	336	335	100	4.7	52.5	17.98	46	Ecology 1997	Yes	1.1	9	9	100	1564.3	Region 9 PRG	No	--	--	--	--
Niobium	7440-03-1	mg/kg	2	1	50	4	4	3.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Scandium	7440-20-2	mg/kg	2	2	100	14	19	16.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 5-1. Summary of All Detected Analytes –Sediment. (6 Pages)

Constituent Name	CAS #	Units	Number Analyzed	Number Detected	Frequency of Detection	Minimum Detect	Maximum Detect	Average Concentration	Ecological Benchmark Comparison							Human Health Benchmark Comparison						
									Eco Benchmark Value	Eco Benchmark Source	Is Max > Benchmark?	Factor of Exceedance	Number of Exceedances	Number of Detect Exceedances	% Detects in Exceedances	HH Benchmark Value	HH Benchmark Source	Is Max > Benchmark?	Factor of Exceedance	Number of Exceedances	Number of Detect Exceedances	% Detects in Exceedances
Selenium	7782-49-2	mg/kg	282	100	35	0.001	4.3	0.82	1	ODEQ 2001	Yes	4.3	72	15	21	390	EPA SSL	No	--	--	--	--
Silicon	7440-21-3	mg/kg	37	37	100	261	804	507.14	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	7440-22-4	mg/kg	301	185	61	0.0144	5.3	0.32	6.1	Ecology 1997	No	--	--	--	--	390	EPA SSL	No	--	--	--	--
Strontium	7440-24-6	mg/kg	55	55	100	9.9	410	32.77	--	--	--	--	--	--	--	46924.17	Region 9 PRG	No	--	--	--	--
Thallium	7440-28-0	mg/kg	225	147	65	0.208	2.5	0.66	--	--	--	--	--	--	--	5.16	Region 9 PRG	No	--	--	--	--
Thorium	7440-29-1	mg/kg	20	20	100	4.21	9.4	6.48	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	7440-31-5	mg/kg	69	54	78	0.83	17.1	3.71	--	--	--	--	--	--	--	46924.17	Region 9 PRG	No	--	--	--	--
Titanium	7440-32-6	mg/kg	21	21	100	379	2030	1048.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Uranium	7440-61-1	mg/kg	61	30	49	1.05	6.8	1.88	--	--	--	--	--	--	--	15.64	Region 9 PRG	No	--	--	--	--
Uranium	7440-61-1	pCi/g	142	142	100	0.76	9.25	2.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	7440-62-2	mg/kg	143	142	99	6.5	140	35.92	57	ODEQ 2001	Yes	2.5	12	12	100	78.21	Region 9 PRG	Yes	1.8	3	3	100
Yttrium	7440-65-5	mg/kg	2	2	100	18	23	20.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	7440-66-6	mg/kg	381	379	99	4	1200	227.8	410	Ecology 1997	Yes	2.9	44	44	100	23000	EPA SSL	No	--	--	--	--
Zinc	7440-66-6	umole/g	70	70	100	0.117	9.49	3.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zirconium	7440-67-7	mg/kg	21	21	100	3.4	33.6	11.51	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls																						
Aroclor-1254	11097-69-1	mg/kg	117	8	7	0.0013	0.024	0.0081	0.0073	Ecology 1997	Yes	3.3	64	5	8	0.2219	Region 9 PRG	No	--	--	--	--
Aroclor-1260	11096-82-5	mg/kg	113	4	4	0.0056	0.011	0.0030	--	--	--	--	--	--	--	0.2219	Region 9 PRG	No	--	--	--	--
Pesticides																						
o,p'-DDD	53-19-0	mg/kg	47	2	4	0.00039	0.00041	0.0003	0.004	ODEQ 2001	No	--	--	--	--	--	--	--	--	--	--	--
o,p'-DDE	3424-82-6	mg/kg	47	2	4	0.00031	0.00031	0.0002	0.0015	ODEQ 2001	No	--	--	--	--	--	--	--	--	--	--	--
o,p'-DDT	789-02-6	mg/kg	48	2	4	0.00071	0.0016	0.0008	0.004	ODEQ 2001	No	--	--	--	--	--	--	--	--	--	--	--
trans-Nonachlor	39765-80-5	mg/kg	55	4	7	0.002	0.003	0.0009	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pesticides/Polychlorindate Biphenyls																						
2,4-Dinitrophenol	51-28-5	mg/kg	58	1	2	0.093	0.093	0.0393	--	--	--	--	--	--	--	120	EPA SSL	No	--	--	--	--
2-Methylphenol (cresol, o-)	95-48-7	mg/kg	43	1	2	0.81	0.81	0.21	0.008	ODEQ 2001	Yes	101.3	42	1	2	3055.2	Region 9 PRG	No	--	--	--	--
Aldrin	309-00-2	mg/kg	124	1	1	0.00061	0.00061	0.0003	0.04	ODEQ 2001	No	--	--	--	--	0.0286	Region 9 PRG	No	--	--	--	--
Anthracene	120-12-7	mg/kg	72	5	7	0.006	0.095	0.0187	2.1	Ecology 1997	No	--	--	--	--	17000	EPA SSL	No	--	--	--	--
Benzo(a)anthracene	56-55-3	mg/kg	67	4	6	0.013	0.37	0.17	5	Ecology 1997	No	--	--	--	--	0.14	Washington DOE CLARC	Yes	2.6	48	2	4
Benzo(a)pyrene	50-32-8	mg/kg	72	5	7	0.013	0.31	0.15	7	Ecology 1997	No	--	--	--	--	0.06	EPA SSL	Yes	5.2	57	4	7
Benzoic acid	65-85-0	mg/kg	18	2	11	0.2	1.1	0.61	0.065	ODEQ 2001	Yes	16.9	16	2	13	--	--	--	--	--	--	--
Bis(2-ethylhexyl) phthalate	117-81-7	mg/kg	53	42	79	0.026	0.78	0.15	0.64	Ecology 1997	Yes	1.2	1	1	100	34.741	Region 9 PRG	No	--	--	--	--
Bromoxynil	1689-84-5	mg/kg	1	1	100	0.035	0.035	0.035	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 5-1. Summary of All Detected Analytes –Sediment. (6 Pages)

Constituent Name	CAS #	Units	Number Analyzed	Number Detected	Frequency of Detection	Minimum Detect	Maximum Detect	Average Concentration	Ecological Benchmark Comparison							Human Health Benchmark Comparison						
									Eco Benchmark Value	Eco Benchmark Source	Is Max > Benchmark?	Factor of Exceedance	Number of Exceedances	Number of Detect Exceedances	% Detects in Exceedances	HH Benchmark Value	HH Benchmark Source	Is Max > Benchmark?	Factor of Exceedance	Number of Exceedances	Number of Detect Exceedances	% Detects in Exceedances
Chlordane	57-74-9	mg/kg	16	1	6	0.003	0.003	0.0012	0.0045	ODEQ 2001	No	--	--	--	--	1.6	Region 9 PRG	No	--	--	--	--
Chrysene	218-01-9	mg/kg	72	5	7	0.013	0.45	0.1748	7.4	Ecology 1997	No	--	--	--	--	0.14	Washington DOE CLARC	Yes	3.2	53	2	4
Delta-BHC	319-86-8	mg/kg	110	1	1	0.0015	0.0015	0.0008	0.12	ORNL 1997	No	--	--	--	--	0.4	EPA SSL	No	--	--	--	--
Dibenzofuran	132-64-9	mg/kg	56	1	2	0.015	0.015	0.0098	32	Ecology 1997	No	--	--	--	--	145.263	Region 9 PRG	No	--	--	--	--
Dichlorodiphenyl-dichloroethane	72-54-8	mg/kg	119	31	26	0.00013	0.023	0.0018	--	--	--	--	--	--	--	2.437	Region 9 PRG	No	--	--	--	--
Dichlorodiphenyl-dichloroethylene	72-55-9	mg/kg	123	59	48	0.0001	0.051	0.0025	--	--	--	--	--	--	--	1.720	Region 9 PRG	No	--	--	--	--
Dichlorodiphenyl-trichloroethane	50-29-3	mg/kg	120	24	20	0.00013	0.11	0.0030	--	--	--	--	--	--	--	1.720	Region 9 PRG	No	--	--	--	--
Dieldrin	60-57-1	mg/kg	124	4	3	0.0001	0.005	0.0011	0.003	ODEQ 2001	Yes	1.7	15	1	7	0.030	Region 9 PRG	No	--	--	--	--
Endosulfan I	959-98-8	mg/kg	114	6	5	0.00039	0.0038	0.0010	0.006	LANL 2005	No	--	--	--	--	367	Region 9 PRG	No	--	--	--	--
Fluoranthene	206-44-0	mg/kg	72	11	15	0.004	0.55	0.17	11	Ecology 1997	No	--	--	--	--	2293.61018	Region 9 PRG	No	--	--	--	--
Gamma-BHC (Lindane)	58-89-9	mg/kg	117	3	3	0.00019	0.008	0.0011	0.0009	ODEQ 2001	Yes	8.9	37	1	3	0.4	EPA SSL	No	--	--	--	--
gamma-Chlordane	5103-74-2	mg/kg	84	3	4	0.0002	0.00062	0.0003	--	--	--	--	--	--	--	1.6	Region 9 PRG	No	--	--	--	--
Hexachlorobenzene	118-74-1	mg/kg	107	8	7	0.00011	0.003	0.0009	0.1	ODEQ 2001	No	--	--	--	--	0.3	EPA SSL	No	--	--	--	--
Isophorone	78-59-1	mg/kg	58	5	9	0.015	0.091	0.0404	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenol	108-95-2	mg/kg	58	3	5	0.035	0.1	0.0606	0.048	Ecology 1997	Yes	2.1	56	2	4	18000	EPA SSL	No	--	--	--	--
Pyrene	129-00-0	mg/kg	71	9	13	0.003	0.5	0.17	9.6	Ecology 1997	No	--	--	--	--	1700	EPA SSL	No	--	--	--	--
Radionuclides																						
Actinium-228	14331-83-0	pCi/g	23	20	87	0.318	2.257	0.87	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Americium-241	14596-10-2	pCi/g	125	40	32	0.00029	0.242	0.0264	5150	ANL 2006	No	--	--	--	--	31	WCH 2006	No	--	--	--	--
Antimony-125	14234-35-6	pCi/g	263	7	3	0.0254	0.118	0.0067	7000	ANL 2006	No	--	--	--	--	--	--	--	--	--	--	--
Barium-140	14798-08-4	pCi/g	21	4	19	-0.042	0.0021	-0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium-7	13966-02-4	pCi/g	333	54	16	0.0043	0.998	0.0788	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bismuth-214	14733-03-0	pCi/g	4	4	100	0.35	0.88	0.57	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calculated Total Uranium	calc_tot_U	mg/kg	37	37	100	0.734	15.4	2.36	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon-14	14762-75-5	pCi/g	4	3	75	3.61	230	78.52	59000	ANL 2006	No	--	--	--	--	--	--	--	--	--	--	--
Cerium-141	13967-74-3	pCi/g	28	7	25	-0.026	0.3	0.0485	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cerium-144	14762-78-8	pCi/g	23	4	17	-0.15	0.18	0.0622	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cesium-134	13967-70-9	pCi/g	471	30	6	0.0004	0.362	0.0099	1480	ANL 2006	No	--	--	--	--	--	--	--	--	--	--	--
Cesium-137	10045-97-3	pCi/g	882	828	94	0.006	6.636	0.87	3120	ANL 2006	No	--	--	--	--	6.2	WCH 2006	Yes	1.1	4	4	100
Cobalt-57	13981-50-5	pCi/g	71	13	18	-0.0084	0.265	0.0200	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt-58	13981-38-9	pCi/g	38	4	11	-0.011	0.0033	-0.00315	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt-60	10198-40-0	pCi/g	845	464	55	-0.0039	16.7273	0.88	1460	ANL 2006	No	--	--	--	--	1.4	WCH 2006	Yes	11.9	120	120	100
Curium-243/244	CM-243/244	pCi/g	12	12	100	0.0003	0.0014	0.0007	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 5-1. Summary of All Detected Analytes –Sediment. (6 Pages)

Constituent Name	CAS #	Units	Number Analyzed	Number Detected	Frequency of Detection	Minimum Detect	Maximum Detect	Average Concentration	Ecological Benchmark Comparison							Human Health Benchmark Comparison						
									Eco Benchmark Value	Eco Benchmark Source	Is Max > Benchmark?	Factor of Exceedance	Number of Exceedances	Number of Detect Exceedances	% Detects in Exceedances	HH Benchmark Value	HH Benchmark Source	Is Max > Benchmark?	Factor of Exceedance	Number of Exceedances	Number of Detect Exceedances	% Detects in Exceedances
Europium-152	14683-23-9	pCi/g	396	236	60	0.0200	9100	506.7	3040	ANL 2006	Yes	3.0	24	24	100	3.3	WCH 2006	Yes	2757.6	46	46	100
Europium-154	15585-10-1	pCi/g	353	40	11	0.0259	0.2650	0.0243	3000	ANL 2006	No	--	--	--	--	3	WCH 2006	No	--	--	--	--
Europium-155	14391-16-3	pCi/g	305	78	26	0.0232	0.18	0.0394	31600	ANL 2006	No	--	--	--	--	130	WCH 2006	No	--	--	--	--
Gross alpha	12587-46-1	pCi/g	40	25	63	4.5	33	7.29	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Gross beta	12587-47-2	pCi/g	101	100	99	0.23	31	20.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iodine-131	10043-66-0	pCi/g	21	4	19	-0.02	0.034	0.01	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron-59	14596-12-4	pCi/g	62	4	6	-0.0017	0.0059	0.0018	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lanthanum-140	13981-28-7	pCi/g	21	4	19	-0.042	0.017	0.0006	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead-212	15092-94-1	pCi/g	27	27	100	0.47	1.22	0.83	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead-214	15067-28-4	pCi/g	40	40	100	0.438	0.946	0.69	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese-54	13966-31-9	pCi/g	253	110	43	-0.0059	0.936	0.0668	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Neptunium-237	13994-20-2	pCi/g	2	2	100	0.482	0.606	0.54	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel-63	13981-37-8	pCi/g	12	12	100	0.059444	3.82	0.99	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Niobium-95	13967-76-5	pCi/g	36	4	11	0.0053	0.027	0.0157	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Plutonium-238	13981-16-3	pCi/g	424	217	51	-0.002	0.133	0.0010	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Plutonium-239/240	PU-239/240	pCi/g	436	370	85	7.27E-05	0.123	0.0107	5860	ANL 2006	No	--	--	--	--	33.9	WCH 2006	No	--	--	--	--
Potassium-40	13966-00-2	pCi/g	739	738	100	1.46E-07	25.3	14.74	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Radium-224	13233-32-4	pCi/g	21	21	100	5.93E-01	3.47	1.17	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Radium-226	13982-63-3	pCi/g	261	258	99	0.4	4.468	1.38	100	ANL 2006	No	--	--	--	--	--	Region 9 PRG	--	--	--	--	--
Radium-228	15262-20-1	pCi/g	10	10	100	0.542	1.26	0.90	90	ANL 2006	No	--	--	--	--	--	Region 9 PRG	--	--	--	--	--
Ruthenium-103	13968-53-1	pCi/g	21	4	19	-0.016	0.012	0.0054	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ruthenium-106	13967-48-1	pCi/g	357	14	4	-0.037	0.276	0.0395	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium-22	13966-32-0	pCi/g	3	3	100	0.0405	0.0548	0.0467	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Strontium-89	14158-27-1	pCi/g	14	10	71	-0.011	0.1	0.0147	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Strontium-90	10098-97-2	pCi/g	505	272	54	0.00144	5.5	0.04	600	ANL 2006	No	--	--	--	--	4.5	WCH 2006	Yes	1.2	1	1	100
Technetium-99	14133-76-7	pCi/g	9	2	22	0.3	0.38	0.14	42200	ANL 2006	No	--	--	--	--	15	WCH 2006	No	--	--	--	--
Thallium-208	14913-50-9	pCi/g	6	6	100	0.245	0.8	0.567	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thorium-228	14274-82-9	pCi/g	251	237	94	0.00644	1410	12.72	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thorium-230	14269-63-7	pCi/g	55	38	69	0.164	5.59	0.57	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thorium-232	TH-232	pCi/g	111	101	91	0.232	3.2	0.89	1000	ANL 2006	No	--	--	--	--	1.3	WCH 2006	Yes	2.5	13	13	100
Thorium-234	15065-10-8	pCi/g	2	2	100	0.687	0.812	0.75	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tritium	10028-17-8	pCi/g	2	2	100	0.011	0.043	0.03	374000	ANL 2006	No	--	--	--	--	510	WCH 2006	No	--	--	--	--
Uranium-233/234	U-233/234	pCi/g	39	39	100	0.29	2.6	0.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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Constituent Name	CAS #	Units	Number Analyzed	Number Detected	Frequency of Detection	Minimum Detect	Maximum Detect	Average Concentration	Ecological Benchmark Comparison							Human Health Benchmark Comparison						
									Eco Benchmark Value	Eco Benchmark Source	Is Max > Benchmark?	Factor of Exceedance	Number of Exceedances	Number of Detect Exceedances	% Detects in Exceedances	HH Benchmark Value	HH Benchmark Source	Is Max > Benchmark?	Factor of Exceedance	Number of Exceedances	Number of Detect Exceedances	% Detects in Exceedances
Uranium-234	13966-29-5	pCi/g	333	331	99	0.0725	11.3	0.95	5000	ANL 2006	No	--	--	--	--	1.1	WCH 2006	Yes	10.3	85	85	100
Uranium-235	15117-96-1	pCi/g	434	252	58	0.00191	0.64	0.0443	4000	ANL 2006	No	--	--	--	--	0.84	WCH 2006	No	--	--	--	--
Uranium-236	13982-70-2	pCi/g	2	2	100	0.04	0.05	0.0450	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Uranium-238	U-238	pCi/g	489	477	98	0.0646	9.97	0.9192	2000	ANL 2006	No	--	--	--	--	1.1	WCH 2006	Yes	9.1	117	116	99
Zinc-65	13982-39-3	pCi/g	369	18	5	0.0033	1.318	0.0723	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zirconium/Niobium-95	ZR/NB-95	pCi/g	107	8	7	0.0146	3	0.0451	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zirconium-95	13967-71-0	pCi/g	38	6	16	-0.046	0.18	0.0530	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Semi-volatile Organic Compounds																						
Benzo(b+k)fluoranthene	BENZBKFL	mg/kg	4	4	100	0.018	0.22	0.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexadecanoic acid (9CI)	57-10-3	mg/kg	1	1	100	130	130	130	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Unknowns																						
Gallium	7440-55-3	mg/kg	2	2	100	16	19	17.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Neodymium	7440-00-8	mg/kg	2	2	100	28	30	29	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Perylene	198-55-0	mg/kg	8	3	38	0.007	0.011	0.0068	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ytterbium	7440-64-4	mg/kg	2	2	100	2	3	2.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Volatile Organic Compounds																						
2-Hexanone	591-78-6	mg/kg	7	1	14	0.1	0.1	0.0304	0.022	ORNL 1997	Yes	4.5	3	1	33	--	--	--	--	--	--	--
2-Methylnaphthalene	91-57-6	mg/kg	68	2	3	0.01	0.011	0.0055	0.02	ODEQ 2001	No	--	--	--	--	320	Washington DOE CLARC	No	--	--	--	--
4-Methyl-2-Pentanone	108-10-1	mg/kg	7	1	14	0.059	0.059	0.0246	0.033	ORNL 1997	Yes	1.8	3	1	33	5280.885751	Region 9 PRG	No	--	--	--	--
Acenaphthene	83-32-9	mg/kg	71	1	1	0.021	0.021	0.0058	3.5	Ecology 1997	No	--	--	--	--	3400	EPA SSL	No	--	--	--	--
Benzo(b)fluoranthene	205-99-2	mg/kg	57	2	4	0.18	0.26	0.18	1.8	ODEQ 2001	No	--	--	--	--	0.14	Washington DOE CLARC	Yes	1.9	53	2	4
Benzo(ghi)perylene	191-24-2	mg/kg	55	4	7	0.014	0.1	0.0285	1.2	Ecology 1997	No	--	--	--	--	1700	EPA SSL	No	--	--	--	--
Benzo(k)fluoranthene	207-08-9	mg/kg	55	3	5	0.023	0.36	0.20	0.27	ODEQ 2001	Yes	1.3	12	1	8	0.14	Washington DOE CLARC	Yes	2.6	48	2	4
Dibenz[a,h]anthracene	53-70-3	mg/kg	63	5	8	0.008	0.062	0.01	0.23	Ecology 1997	No	--	--	--	--	0.06	EPA SSL	Yes	1.0	48	1	2
Diethylphthalate	84-66-2	mg/kg	54	1	2	0.01	0.01	0.0075	0.006	ODEQ 2001	Yes	1.7	53	1	2	48882.47761	Region 9 PRG	No	--	--	--	--
Di-n-butylphthalate	84-74-2	mg/kg	49	3	6	0.022	0.044	0.0208	0.043	Ecology 1997	Yes	1.0	45	1	2	6100	EPA SSL	No	--	--	--	--
Fluorene	86-73-7	mg/kg	68	3	4	0.007	0.022	0.0073	3.6	Ecology 1997	No	--	--	--	--	2300	EPA SSL	No	--	--	--	--
Indeno(1,2,3-cd)pyrene	193-39-5	mg/kg	60	3	5	0.016	0.12	0.0297	0.73	Ecology 1997	No	--	--	--	--	0.14	Washington DOE CLARC	No	--	--	--	--
Naphthalene	91-20-3	mg/kg	71	3	4	0.002	0.015	0.0063	37	Ecology 1997	No	--	--	--	--	55.91605683	Region 9 PRG	No	--	--	--	--
Phenanthrene	85-01-8	mg/kg	71	5	7	0.004	0.33	0.17	5.7	Ecology 1997	No	--	--	--	--	3400	EPA SSL	No	--	--	--	--
Tetrachloroethene	127-18-4	mg/kg	7	1	14	0.0057	0.0057	0.0042	0.057	ODEQ 2001	No	--	--	--	--	0.483591399	Region 9 PRG	No	--	--	--	--

Table 5-1. Summary of All Detected Analytes –Sediment. (6 Pages)

Constituent Name	CAS #	Units	Number Analyzed	Number Detected	Frequency of Detection	Minimum Detect	Maximum Detect	Average Concentration	Ecological Benchmark Comparison							Human Health Benchmark Comparison						
									Eco Benchmark Value	Eco Benchmark Source	Is Max > Benchmark?	Factor of Exceedance	Number of Exceedances	Number of Detect Exceedances	% Detects in Exceedances	HH Benchmark Value	HH Benchmark Source	Is Max > Benchmark?	Factor of Exceedance	Number of Exceedances	Number of Detect Exceedances	% Detects in Exceedances
Toluene	108-88-3	mg/kg	7	1	14	0.001	0.001	0.0010	0.05	ORNL 1997	No	--	--	--	--	520	Region 9 PRG	No	--	--	--	--
Xylenes (total)	1330-20-7	mg/kg	7	1	14	0.005	0.005	0.0040	0.004	ODEQ 2001	Yes	1.3	4	1	25	270.630538	Region 9 PRG	No	--	--	--	--

EPA = U.S. Environmental Protection Agency
HH = human health
Max = maximum
ODEQ = Oregon Department of Environmental Quality
SSL = soil screening level

Ecological Sediment Benchmarks Sources: (Complete reference detail provided in Section 7.0 of this document)

ANL 2006, *RESRAD Biota for Windows*

Ingersoll et al. 1996, *Calculation and Evaluation of Sediment Effect Concentrations for the Amphipod Hyalella azteca and the Midge Chironomus riparius.*

LANL 2005, *Ecorisk Database* (Release 2.2).

ORNL 1997, *Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Sediment –Associated Biota: 1997 Revision.*

ODEQ 2001, *Guidance for Ecological Risk Assessment Level II – Screening Level Values.*

Persaud et al. 1993, "Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario."

Ecology 1997, *Creation and Analysis of Freshwater Sediment Quality Values in Washington State.*

Human Health Sediment Benchmark Sources: (Complete reference detail provided in Section 7.0 of this document)

EPA 2002, *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites,* Soil Screening Levels (SSLs) from Exhibit A-1 Generic SSLs for Residential Scenario.

EPA 2004a, *Preliminary Remediation Goals (PRGs) Tables*, Residential Soil.

Ecology 2007, *Cleanup Levels and Risk Calculation (CLARC) table, Method B unrestricted land use* (lowest between carcinogenic nd noncarcinogenic values).

WCH 2006, *Columbia River Component Data Evaluation Summary Report,* Table 4-2: Sediment Benchmark Values for the Protection of Human Health.

Table 5-2. Summary of All Detected Analytes – Surface Water. (4 Pages)

Constituent Name	CAS #	Units	Number Analyzed	Number Detected	Frequency of Detection	Minimum Detect	Maximum Detect	Average Concentration	Ecological Benchmark Comparison							Human Health Benchmark Comparison							
									Eco Benchmark Value	Eco Benchmark Source	Is Max > Benchmark?	Factor of Exceedance	Number of Exceedances	Number of Detect Exceedances	% Detects in Exceedances	HH Benchmark Value	HH Benchmark Source	Is Max > Benchmark?	Factor of Exceedance	Number of Exceedances	Number of Detect Exceedances	% Detects in Exceedances
Metals																							
Aluminum	7429-90-5	mg/L	195	124	64	0.00034	21.1	0.38	0.087	USEPA 2006	Yes	242.5	42	42	100	36.4986678	Region 9 PRG	No	--	--	--	--
Ammonia	7664-41-7	mg/L	179	73	41	0.010	0.09	1.46E-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	7440-36-0	mg/L	1482	1328	90	2.89E-05	0.0057	0.00027	0.03	Suter and Tsao 1996	No	--	--	--	--	0.0056	NRWQC	Yes	1.0	89	1	1
Arsenic	7440-38-2	mg/L	1390	1357	98	6.00E-06	0.00851	0.00095	0.15	USEPA 2006	No	--	--	--	--	0.000018	NRWQC	Yes	472.8	1389	1356	98
Barium	7440-39-3	mg/L	201	200	100	0.0174	0.292	0.03971	0.004	Suter and Tsao 1996	Yes	73.0	201	200	100	1	NRWQC	No	--	--	--	--
Beryllium	7440-41-7	mg/L	1484	109	7	9.95E-07	0.002	3.95E-05	0.00066	Suter and Tsao 1996	Yes	3.0	8	5	63	0.004	MCL	No	--	--	--	--
Boron	7440-42-8	mg/L	39	39	100	0.0051	0.0208	0.00974	0.0016	ODEQ 1998	Yes	13.0	39	39	100	--	--	--	--	--	--	--
Cadmium	7440-43-9	mg/L	1459	1061	73	4.06E-06	0.0035	0.00012	0.00025	USEPA 2006	Yes	14.0	162	22	14	0.0018	Region 6	Yes	1.9	13	2	15
Chromium	7440-47-3	mg/L	1503	1133	75	1.94E-05	0.218	0.00509	0.074	USEPA 2006	Yes	2.9	24	24	100	0.1095	Region 9 PRG	Yes	2.0	14	14	100
Cobalt	7440-48-4	mg/L	158	8	5	0.0017	0.0096	0.00151	0.023	Suter and Tsao 1996	No	--	--	--	--	0.729999467	Region 9 PRG	No	--	--	--	--
Copper	7440-50-8	mg/L	1499	1383	92	1.99E-04	0.0415	0.00105	0.009	USEPA 2006	Yes	4.6	16	14	88	1.3	MCL	No	--	--	--	--
Hexavalent Chromium	18540-29-9	mg/L	50	19	38	0.003	0.057	0.00545	0.01	Ecology 2006	Yes	5.7	5	5	100	0.109499988	Region 9 PRG	No	--	--	--	--
Iron	7439-89-6	mg/L	159	86	54	0.016	20.4	0.46	1	USEPA 2006	Yes	20.4	10	10	100	0.3	NRWQC	Yes	68.0	18	18	100
Lead	7439-92-1	mg/L	1381	1234	89	1.11E-06	0.066	0.00037	0.0025	Ecology 2006	Yes	26.4	25	25	100	0.015	MCL	Yes	4.4	7	7	100
Lithium	7439-93-2	mg/L	39	39	100	0.0011	0.0026	0.00152	0.014	Suter and Tsao 1996	No	--	--	--	--	0.729999467	Region 9 PRG	No	--	--	--	--
Manganese	7439-96-5	mg/L	219	179	82	3.70E-05	0.935	0.01870	0.12	Suter and Tsao 1996	Yes	7.8	7	7	100	0.05	NRWQC	Yes	18.7	14	14	100
Mercury	7439-97-6	mg/L	610	561	92	2.25E-07	0.0000474	1.29E-06	0.000012	Ecology 2006	Yes	4.0	49	9	18	0.002	MCL	No	--	--	--	--
Molybdenum	7439-98-7	mg/L	40	20	50	0.0006	0.0053	0.00151	0.37	Suter and Tsao 1996	No	--	--	--	--	0.182499967	Region 9 PRG	No	--	--	--	--
Nickel	7440-02-0	mg/L	1497	1354	90	2.70E-05	0.03204	0.00112	0.052	USEPA 2006	No	--	--	--	--	0.61	NRWQC	No	--	--	--	--
Selenium	7782-49-2	mg/L	1367	702	51	6.73E-05	0.0059	0.00043	0.005	Ecology 2006	Yes	1.2	1	1	100	0.05	MCL	No	--	--	--	--
Silica	7631-86-9	mg/L	1	1	100	2	2	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silicon	7440-21-3	mg/L	41	41	100	0.0954	4.65	2.308	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	7440-22-4	mg/L	1503	489	33	8.33E-07	0.003	0.00011	0.00036	Suter and Tsao 1996	Yes	8.3	149	5	3	0.182499967	Region 9 PRG	No	--	--	--	--
Strontium	7440-24-6	mg/L	158	158	100	0.081	0.378	0.14706	1.5	Suter and Tsao 1996	No	--	--	--	--	21.900	Region 9 PRG	No	--	--	--	--
Thallium	7440-28-0	mg/L	1277	1113	87	3.99E-06	0.0083	0.00013	0.012	Suter and Tsao 1996	No	--	--	--	--	0.00024	NRWQC	Yes	34.6	42	5	12

Table 5-2. Summary of All Detected Analytes – Surface Water. (4 Pages)

Constituent Name	CAS #	Units	Number Analyzed	Number Detected	Frequency of Detection	Minimum Detect	Maximum Detect	Average Concentration	Ecological Benchmark Comparison							Human Health Benchmark Comparison							
									Eco Benchmark Value	Eco Benchmark Source	Is Max > Benchmark?	Factor of Exceedance	Number of Exceedances	Number of Detect Exceedances	% Detects in Exceedances	HH Benchmark Value	HH Benchmark Source	Is Max > Benchmark?	Factor of Exceedance	Number of Exceedances	Number of Detect Exceedances	% Detects in Exceedances
Thorium	7440-29-1	mg/L	46	3	7	5.65E-06	0.000073	3.99E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	7440-31-5	mg/L	39	2	5	0.0053	0.0069	0.00278	0.073	Suter and Tsao 1996	No	--	--	--	--	21.8995204	Region 9 PRG	No	--	--	--	--
Uranium	7440-61-1	mg/L	125	86	69	0.00012	0.0442	0.00556	0.0026	Suter and Tsao 1996	Yes	17.0	55	16	29	0.0073	Region 9 PRG	Yes	6.1	49	10	20
Uranium	7440-61-1	pCi/L	130	129	99	0.14	99.8	5.013	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	7440-62-2	mg/L	158	59	37	0.00065	0.0486	0.00459	0.02	Suter and Tsao 1996	Yes	2.4	5	5	100	0.036499999	Region 9 PRG	Yes	1.3	3	3	100
Zinc	7440-66-6	mg/L	1500	1475	98	0.000351	0.415	0.00512	0.105	Ecology 2006	Yes	4.0	12	12	100	7.4	NRWQC	No	--	--	--	--
Pesticides/Polychlorinated Biphenyls																						
Bis(2-ethylhexyl) phthalate	117-81-7	mg/L	39	37	95	0.0006	0.006	0.00171	0.003	Suter and Tsao 1996	Yes	2.0	4	2	50	0.001	NRWQC	Yes	5.0	20	18	90
Dichlorodiphenyl-dichloroethane	72-54-8	mg/L	60	4	7	6.70E-08	1.30E-07	6.37E-08	--	--	--	--	--	--	--	0.00000031	NRWQC	No	--	--	--	--
Dichlorodiphenyl-dichloroethylene	72-55-9	mg/L	60	18	30	7.10E-08	1.20E-06	2.38E-07	--	--	--	--	--	--	--	0.000	NRWQC	Yes	5.5	47	8	17
Dichlorodiphenyl-trichloroethane	50-29-3	mg/L	60	5	8	1.00E-07	6.50E-07	1.11E-07	--	--	--	--	--	--	--	0.00000022	NRWQC	Yes	3.0	40	1	3
Dieldrin	60-57-1	mg/L	60	4	7	7.60E-08	3.00E-07	9.50E-08	0.0000019	Ecology 2006	No	--	--	--	--	0.000000052	NRWQC	Yes	5.8	58	4	7
Heptachlor epoxide	1024-57-3	mg/L	60	6	10	3.30E-08	1.20E-07	5.85E-08	0.0000038	EPA 2006	No	--	--	--	--	--	--	--	--	--	--	--
Hexachlorobenzene	118-74-1	mg/L	60	3	5	1.10E-07	1.80E-07	7.85E-08	--	--	--	--	--	--	--	0.00000028	NRWQC	No	--	--	--	--
Radionuclides																						
Antimony-125	14234-35-6	pCi/L	591	1	0	0.131	0.131	-0.18	400000	ANL 2006	No	--	--	--	--	300	EPA 2000	No	--	--	--	--
Barium-140	14798-08-4	pCi/L	176	2	1	4	4.5	0.23	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium-7	13966-02-4	pCi/L	702	113	16	0.0134	40.7	2.48	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calculated Total Uranium	calc_tot_U	mg/L	39	39	100	9.82E-05	0.003694718	0.00073	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon-14	14762-75-5	pCi/L	28	6	21	8.77	608	27.49	609	ANL 2006	No	--	--	--	--	2000	EPA 2000	No	--	--	--	--
Cesium-134	13967-70-9	pCi/L	836	2	0	0.699	1	-0.06070	21.1	ANL 2006	No	--	--	--	--	80	EPA 2000	No	--	--	--	--
Cesium-137	10045-97-3	pCi/L	911	26	3	0	8.54	0.45	42.6	ANL 2006	No	--	--	--	--	200	EPA 2000	No	--	--	--	--
Cobalt-60	10198-40-0	pCi/L	911	15	2	0.4	4.42	0.28892	3760	ANL 2006	No	--	--	--	--	100	EPA 2000	No	--	--	--	--
Gross alpha	12587-46-1	pCi/L	577	180	31	-0.1	228	4.73	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Gross beta	12587-47-2	pCi/L	743	348	47	0.4	328	7.240	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iodine-127	7553-56-2	pCi/L	56	56	100	0.00043	51.488	0.92419	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iodine-129	15046-84-1	pCi/L	87	85	98	6.00E-07	0.4056	0.02809	40000	ANL 2006	No	--	--	--	--	1	EPA 2000	No	--	--	--	--
Iodine-129/Iodine-127 ratio	I129/127RT	atomr	56	56	100	2.95E-08	0.000433	3.08E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iodine-131	10043-66-0	pCi/L	184	3	2	1.0	1.2	-0.02947	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 5-2. Summary of All Detected Analytes – Surface Water. (4 Pages)

Constituent Name	CAS #	Units	Number Analyzed	Number Detected	Frequency of Detection	Minimum Detect	Maximum Detect	Average Concentration	Ecological Benchmark Comparison							Human Health Benchmark Comparison						
									Eco Benchmark Value	Eco Benchmark Source	Is Max > Benchmark?	Factor of Exceedance	Number of Exceedances	Number of Detect Exceedances	% Detects in Exceedances	HH Benchmark Value	HH Benchmark Source	Is Max > Benchmark?	Factor of Exceedance	Number of Exceedances	Number of Detect Exceedances	% Detects in Exceedances
Iron-59	14596-12-4	pCi/L	178	8	4	1.8	3	0.99	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead-212	15092-94-1	pCi/L	1	1	100	0.0107	0.0107	0.01070	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Plutonium-238	13981-16-3	pCi/L	115	10	9	6.35E-06	0.0052	3.61E-05	--	--	--	--	--	--	--	15	EPA 2000	No	--	--	--	--
Plutonium-239/240	PU-239/240	pCi/L	115	39	34	6.89E-06	0.00177	4.40E-05	187	ANL 2006	No	--	--	--	--	15	EPA 2000	No	--	--	--	--
Potassium-40	13966-00-2	pCi/L	775	369	48	0.027	126	7.76814	--	--	--	--	--	--	--	1.9	EPA 2000	Yes	66.3	279	71	25
Radium-226	13982-63-3	pCi/L	152	11	7	2.21E-02	3.6	0.09814	4	ANL 2006	No	--	--	--	--	5	EPA 2000	No	--	--	--	--
Radium-228	15262-20-1	pCi/L	51	4	8	0.358	1.04	0.08171	3	ANL 2006	No	--	--	--	--	5	EPA 2000	No	--	--	--	--
Ruthenium-106	13967-48-1	pCi/L	687	1	0	4.27	4.27	-0.53416	--	--	--	--	--	--	--	30	EPA 2000	No	--	--	--	--
Strontium-90	10098-97-2	pCi/L	1240	903	73	0.022	178	0.62	300	ANL 2006	No	--	--	--	--	8	EPA 2000	Yes	22.3	10	10	100
Technetium-99	14133-76-7	pCi/L	306	68	22	0.272	144	5.811	700000	ANL 2006	No	--	--	--	--	900	EPA 2000	No	--	--	--	--
Thorium-228	14274-82-9	pCi/L	152	3	2	0.0232	0.0837	0.01830	--	--	--	--	--	--	--	15	EPA 2000	No	--	--	--	--
Thorium-230	14269-63-7	pCi/L	49	3	6	0.0542	2.59	0.04863	--	--	--	--	--	--	--	15	EPA 2000	No	--	--	--	--
Thorium-232	TH-232	pCi/L	54	2	4	0.06	0.0871	0.00224	300	ANL 2006	No	--	--	--	--	15	EPA 2000	No	--	--	--	--
Tritium	10028-17-8	pCi/L	1586	1246	79	13.4	112000	1500	300000000	ANL 2006	No	--	--	--	--	20000	EPA 2000	Yes	5.6	21	21	100
Uranium-234	13966-29-5	pCi/L	1147	1133	99	0.078	111	1.349	200	ANL 2006	No	--	--	--	--	20	EPA 2000	Yes	5.6	24	24	100
Uranium-235	15117-96-1	pCi/L	1173	255	22	0.00349	2.93	0.05368	200	ANL 2006	No	--	--	--	--	20	EPA 2000	No	--	--	--	--
Uranium-236	13982-70-2	pCi/L	7	7	100	0.00247	1.02	0.59464	--	--	--	--	--	--	--	20	EPA 2000	No	--	--	--	--
Uranium-238	U-238	pCi/L	1152	1127	98	0.07	99.3	1.21	200	ANL 2006	No	--	--	--	--	20	EPA 2000	Yes	5.0	29	24	83
Zirconium-95	13967-71-0	pCi/L	158	5	3	0.9	1.5	0.27	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Semi-volatile Organic Compound																						
Dimethyl phthalate	131-11-3	mg/L	39	2	5	0.000947	0.003	0.00197	0.003	ODEQ 2001	No	--	--	--	--	72	Washington DOE CLARC	No	--	--	--	--
Unknowns																						
Dibutyl chlorendate	1770-80-5	mg/L	2	2	100	0	0	0.00000	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Orthophosphate	ORTHOPHOS	mg/L	174	127	73	0.0031	0.141	0.04671	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Volatile Organic Compounds																						
1,1,2-Trichloroethane	79-00-5	mg/L	164	11	7	0.00013	0.00088	0.00013	1.2	Suter and Tsao 1996	No	--	--	--	--	0.000199513	Region 9 PRG	Yes	4.4	10	10	100
1,2-Dichloroethane	107-06-2	mg/L	164	14	9	0.00012	0.0011	0.00013	0.91	Suter and Tsao 1996	No	--	--	--	--	0.000123143	Region 9 PRG	Yes	8.9	46	13	28
1,4-Dichlorobenzene	106-46-7	mg/L	203	6	3	0.00012	0.00044	8.22E-05	0.015	Suter and Tsao 1996	No	--	--	--	--	0.00050176	Region 9 PRG	No	--	--	--	--
Acetone	67-64-1	mg/L	164	66	40	0.00025	0.0062	0.00109	1.5	Suter and Tsao 1996	No	--	--	--	--	5.475	Region 9 PRG	No	--	--	--	--

Table 5-2. Summary of All Detected Analytes – Surface Water. (4 Pages)

Constituent Name	CAS #	Units	Number Analyzed	Number Detected	Frequency of Detection	Minimum Detect	Maximum Detect	Average Concentration	Ecological Benchmark Comparison							Human Health Benchmark Comparison						
									Eco Benchmark Value	Eco Benchmark Source	Is Max > Benchmark?	Factor of Exceedance	Number of Exceedances	Number of Detect Exceedances	% Detects in Exceedances	HH Benchmark Value	HH Benchmark Source	Is Max > Benchmark?	Factor of Exceedance	Number of Exceedances	Number of Detect Exceedances	% Detects in Exceedances
Benzene	71-43-2	mg/L	164	2	1	9.10E-05	0.00014	0.00008	0.13	Suter and Tsao 1996	No	--	--	--	--	0.00035387	Region 9 PRG	No	--	--	--	--
Carbon disulfide	75-15-0	mg/L	164	6	4	0.00033	0.0024	0.00017	0.00092	Suter and Tsao 1996	Yes	2.6	1	1	100	--	--	--	--	--	--	--
Carbon tetrachloride	56-23-5	mg/L	163	1	1	0.0041	0.0041	0.00012	0.0098	Suter and Tsao 1996	No	--	--	--	--	0.0001713	Region 9 PRG	Yes	23.9	1	1	100
Chloroform	67-66-3	mg/L	164	20	12	0.00014	0.0055	0.00030	0.028	Suter and Tsao 1996	No	--	--	--	--	0.000166017	Region 9 PRG	Yes	33.1	19	19	100
cis-1,2-Dichloroethylene	156-59-2	mg/L	164	4	2	0.0003	0.0004	8.73E-05	0.047	Suter and Tsao 1996	No	--	--	--	--	0.060833333	Region 9 PRG	No	--	--	--	--
Di-n-butylphthalate	84-74-2	mg/L	39	6	15	0.0005	0.0008	0.00062	0.035	Suter and Tsao 1996	No	--	--	--	--	2	NRWQC	No	--	--	--	--
Methylenechloride	75-09-2	mg/L	164	20	12	0.00026	0.001	0.00018	2.2	Suter and Tsao 1996	No	--	--	--	--	0.004275632	Region 9 PRG	No	--	--	--	--
Tetrachloroethene	127-18-4	mg/L	164	1	1	0.0007	0.0007	0.00015	0.098	Suter and Tsao 1996	No	--	--	--	--	0.000104236	Region 9 PRG	Yes	6.7	82	1	1
Toluene	108-88-3	mg/L	164	56	34	0.00012	0.00098	0.00021	0.0098	Suter and Tsao 1996	No	--	--	--	--	0.723423423	Region 9 PRG	No	--	--	--	--
Trichloroethene	79-01-6	mg/L	164	24	15	0.00017	0.0033	0.00024	0.047	Suter and Tsao 1996	No	--	--	--	--	2.8015E-05	Region 9 PRG	Yes	117.8	164	24	15
Xylenes (total)	1330-20-7	mg/L	164	22	13	0.00032	0.0012	0.00029	0.013	Suter and Tsao 1996	No	--	--	--	--	0.205733722	Region 9 PRG	No	--	--	--	--

DOE = U.S. Department of Energy
EPA = U.S. Environmental Protection Agency
HH = human health
Max = maximum
ODEQ = Oregon Department of Environmental Quality
PRG = preliminary remediation goal

Ecological Surface Water Benchmark Sources: (Complete reference detail provided in Section 7.0 of this document)

Suter and Tsao 1996, *Toxicological Benchmarks for Screening of Potential Contaminants of Concern for Effects on Aquatic Biota on Oak Ridge Reservation: 1996 Revision*.

EPA,2006. "National Recommended Water Quality Criteria: 2002."

Ecology 2006, "Water Quality Standards for Surface Waters of the State of Washington," Chaper 173-201A.

ANL 2006, *RESRAD Biota for Windows*

ODEQ 1998, *Guidance for Ecological Risk Assessment, Level II Screening Values.*

LANL 2005, *Ecorisk Database* (Release 2.2).

Human Health Surface Water Benchmark Sources: (Complete reference detail provided in Section 7.0 of this document)

EPA 2000, *Soil Screening Guidance for Radionuclides: User's Guide.*

EPA 2003, *National Primary Drinking Water Regulations*.

EPA 2004a, *Preliminary Remediation Goals (PRGs) for Tapwater*.

EPA 2006, *National Recommended Water Quality Criteria (NRWQC)*, Human Health for Consumption of Water + Organism values.

Ecology 2007, *Cleanup Levels and Risk Calculation (CLARC) table, Method B unrestricted land use* (lowest between carcinogenic nd noncarcinogenic values).

Table 5-3. Summary of Analytes Exceeding Human Health or Ecological Screening Criteria – Sediment.

Metals	Criteria Exceeded	Organics	Criteria Exceeded	Radionuclides	Criteria Exceeded
Aluminum	Eco	PAHs	HH	Cesium-137	HH
Antimony	Eco	Pentachlorophenol	Eco	Cobalt-60	HH
Arsenic	HH	Aroclor 1254	Eco	Europium-152	Eco & HH
Barium	Eco	Benzoic Acid	Eco	Strontium-90	HH
Cadmium	Eco & HH	Bis(2-ethylhexyl) phthalate	Eco	Thorium -232	HH
Chromium	HH	Dieldrin	Eco	Uranium-234	HH
Iron	HH	Gamma-BHC	Eco	Uranium-238	HH
Manganese	HH and Eco	phenol	Eco		
Mercury	Eco	4-methyl-2-pentanone	Eco		
Nickel	Eco	diethylphthalate	Eco		
Selenium	Eco	di-n-butylphthalate	Eco		
Vanadium	HH and Eco	Xylenes	Eco		
Zinc	Eco	2-hexanone	Eco		

Eco = Ecological
HH = Human Health
PAH = polyaromatic hydrocarbon

Table 5-4. Summary of Analytes Exceeding Human Health or Ecological Screening Criteria – Surface Water.

Metals	Criteria Exceeded	Organics	Criteria Exceeded	Radio-nuclides	Criteria Exceeded
Aluminum	Eco	Bis(2-ethylhexyl) phthalate	HH & Eco	Potassium-40	HH
Antimony	HH	Pesticides	HH	Strontium-90	HH
Arsenic	HH	Carbon Tetrachloride	HH	Tritium	HH
Barium	Eco	1,1,2-Trichloroethane (TCA)	HH	Uranium-234	HH
Beryllium	Eco	1,2-Dichloroethane (DCA)	HH	Uranium-238	HH
Boron	Eco	Chloroform	HH		
Cadmium	Eco & HH	Tetrachloroethene (PCE)	HH		
Chromium	Eco & HH	Trichloroethene (TCE)	HH		
Copper	Eco				
Chromium – hexavalent	Eco				
Iron	Eco & HH				
Lead	Eco & HH				
Manganese	Eco & HH				
Mercury	Eco				
Selenium	Eco				
Silver	Eco				
Thallium	HH				
Uranium	Eco & HH				
Vanadium	Eco & HH				
Zinc	Eco				

Eco = Ecological
HH = Human Health
PAH = polyaromatic hydrocarbon

Table 5-5. Summary of Analytes Compared to Background – Sediment. (2 Pages)

Compound	Detected Maximum	Average Upriver Concentration	Retained?	Discussion
Metals (mg/kg)				
Aluminum	72,254	10,663	**No**	No significant increase in 100 Area; also common in fertilizer
Arsenic	20	6.4	Yes	Increase in arsenic concentrations within 100 Area
Antimony	10	0.97	Yes	Highest antimony concentrations in 100 Area
Barium	1,027	126.4	Yes	Highest barium concentrations in 100 Area
Cadmium	15	5.4	**No**	Cadmium concentration below background in Hanford Reach
Chromium	130	42.1	Yes	Increase in chromium concentrations in Hanford Reach
Iron	34,000	13,044	**No**	No significant increase in 100 Area; also common in fertilizer
Manganese	4,439	291	Yes	Single sample exceeded background average
Mercury	0.68	0.107	Yes	Maximum exceeds upriver background concentration
Nickel	52.5	23.5	**No**	Nickel concentrations below background in Hanford Reach
Selenium	4.3	0.375	Yes	Maximum exceeds upriver background concentration
Vanadium	140	32.4	Yes	Increased concentrations in Hanford Reach and downriver
Zinc	1,200	428.5	**No**	No significant increase in 100 Area; known to be coming from upriver
Organics (mg/kg)				
PAHs	NA	NA	**No**	Reported only downriver of Hanford Site
Pentachlorophenol	1.2	1.126	Yes	Widely used wood preservative
Aroclor 1254	0.024	0.979	**No**	Concentrations do not exceed upriver background concentrations

Table 5-5. Summary of Analytes Compared to Background – Sediment. (2 Pages)

Compound	Detected Maximum	Average Upriver Concentration	Retained?	Discussion
Benzoic Acid	1.1	1.65	**No**	Sampling artifact; also natural decay product in sediment
Bis(2-ethylhexyl)phthalate	0.78	0.080	Yes	Common lab contaminant
Dieldrin	0.005	0.122	**No**	Agricultural pesticide
Gamma-BHC	0.008	0.122	**No**	Agricultural pesticide
Phenol	0.1	0.272	**No**	Naturally produced in decaying organic matter
4-methyl-2-pentanone	0.059	Not listed	Yes	Common solvent; also known as MIBK
Diethylphthalate	0.01	0.272	**No**	Common lab contaminant
Di-n-butylphthalate	0.044	0.044	**No**	Common lab contaminant
Xylenes	0.005	0.0002	Yes	Common solvent
2-hexanone	0.1	Not listed	Yes	Common solvent
Radionuclides (pCi/g)				
Cesium-137	6.64	0.597	Yes	Known site contaminant; highest concentrations behind McNary Dam
Cobalt-60	16.73	0.0054	Yes	Known site contaminant; highest concentrations for Lake Wallula
Europium-152	9,100	2,934	**No**	Highest concentrations behind Ice Harbor Dam
Strontium-90	5.5	0.069	Yes	Highest concentrations upriver of 100 Area
Thorium -232	3.2	1.01	Yes	Increase in concentrations within 100 Area
Uranium-234	11.3	0.837	Yes	Increased concentrations in Hanford Reach and downriver
Uranium-238	9.97	0.832	Yes	Increased concentrations in Hanford Reach and downriver

Note: Analytes shown in **Bold** font were not retained as Site Analytes.
PAH = Polyaromatic Hydrocarbon

Table 5-6. Summary of Analytes Compared to Background – Surface Water. (2 Pages)

Compound	Maximum Detected	Average Upriver Concentration	Retained? (Yes/No)	Discussion
Metals (mg/L)				
Aluminum	21.1	0.023	Yes	Concentration increase in 100 Area
Antimony	0.0057	0.000191	Yes	Higher concentration downriver
Arsenic	0.008	0.00063	Yes	Concentration increases along Hanford Reach
Barium	0.292	0.0268	Yes	Concentration increases along Hanford Reach
Beryllium	0.002	0.000016	Yes	Concentration increases along Hanford Reach
Boron	0.021	0.012	Yes	Concentration exceeds background
Cadmium	0.0035	0.000021	Yes	Cadmium present in seeps, indistinguishable from background (DOE/RL-2007-21)
Chromium	0.218	0.000192	Yes	Concentration increase along Hanford Reach
Copper	0.0415	0.0064	Yes	Detected in seeps
Chromium – hexavalent	0.057	0.00136	Yes	Known site contaminant, concentration increases along Hanford Reach
Iron	20.4	0.0242	Yes	Detection from irrigation returns
Manganese	0.935	0.00197	Yes	Concentration increases in 100 Area
Mercury	0.000047	0.000001	Yes	Concentration increases in 100 Area
Lead	0.066	0.000062	Yes	Concentration increases along Hanford Reach
Selenium	0.0059	0.000193	Yes	Single samples exceeds background
Silver	0.003	0.000004	Yes	Silver present in seeps
Thallium	0.0083	0.000021	Yes	Thallium present in seeps
Uranium	0.044	0.0005	Yes	Highest detections from irrigation returns, associated with fertilizer
Vanadium	0.0486	0.00045	Yes	Vanadium present in seeps
Zinc	0.415	0.00188	Yes	Concentration increases along Hanford Reach

Table 5-6. Summary of Analytes Compared to Background – Surface Water. (2 Pages)

Compound	Maximum Detected	Average Upriver Concentration	Retained? (Yes/No)	Discussion
Radionuclides (pCi/L)				
Potassium-40	126	1.67	Yes	Known site contaminant in groundwater
Strontium-90	178	0.0745	Yes	Known site contaminant in groundwater
Tritium	112,000	28.9	Yes	Known site contaminant in groundwater
Uranium-234	111	0.2243	Yes	Known site contaminant in groundwater
Uranium-238	99.3	0.1786	Yes	Known site contaminant in groundwater
Organics (mg/L)				
Bis(2-ethylhexyl) phthalate	0.006	0.002	Yes	Concentration increases along Hanford Reach
Pesticides		various	**No**	Detection from irrigation returns
Carbon Tetrachloride	0.0041	0.0001	Yes	Reported near 300 Area
1,1,2-Trichloroethane (TCA)	0.00088	0.0001	Yes	Known site contaminant in groundwater
1,2-Dichloroethane (DCA)	0.0011	0.0001	Yes	Known site contaminant in groundwater
Chloroform	0.0055	0.0001	Yes	Known site contaminant in groundwater
Tetrachlorethene (PCE)	0.0007	0.0002	Yes	Reported near 300 Area
Trichlorothene (TCE)	0.0033	0.0001	Yes	Known site contaminant in groundwater

Note: Analytes shown in **Bold** font were not retained for further evaluation.

Table 5-7. Summary of Analytes Compared to Frequency of Exceedance – Sediment.

Compound	Low Frequency of Exceedance	Retained? (Yes/No)	Discussion
Metals (mg/kg)			
Arsenic	No	Yes	90% exceedance of HH criteria (295/327 samples)
Antimony	No	Yes	7% exceedance of ecological criteria (19/256 samples)
Barium	No	Yes	75% exceedance of ecological criteria (124/165 samples)
Chromium	No	Yes	44% exceedance of HH criteria (162/365 samples)
Manganese	Yes	**No**	<1% exceedance of ecological criteria (1/165) <1% exceedence of HH criteria (1/165 samples)
Mercury	Yes	**No**	<1% exceedance of ecological criteria (1/310)
Selenium	No	Yes	5.3% exceedance of ecological criteria (15/282)
Vanadium	No	Yes	8% exceedance of ecological criteria (12/143 samples)
Organics (mg/kg)			
Pentachlorophenol	Yes	**No**	5.8% exceedance (4/69) of ecological criteria, no exceedance of HH criteria; common wood preservative.
4-methyl-2-pentanone	Yes	Yes	14% exceedance of ecological criteria (1/7)
xylenes	Yes	Yes	14% exceedance of ecological criteria (1/7)
2-hexanone	Yes	Yes	14% exceedance of ecological criteria (1/7)
Radionuclides (pCi/g)			
Cobalt-60	No	Yes	14% exceedance of HH criteria (120/845 samples)
Cesium-137	Yes	**No**	<1% exceedance of HH criteria (4/882 samples). (Note: Cs-137 subsequently included as Site Analyte for other reasons)
Strontium-90	Yes	**No**	<1% exceedance of HH criteria (1/505 samples)
Thorium -232	No	Yes	12% exceedance of HH criteria (13/111 samples)
Uranium-234	No	Yes	26% exceedance of HH criteria (85/333 samples)
Uranium-238	No	Yes	24% exceedance of HH criteria (116/489 samples)

Note: Analytes shown in **Bold** font were not retained for further evaluation.
HH = Human Health

Table 5-8. Summary of Analytes Compared to Frequency of Exceedance – Surface Water. (2 Pages)

Compound	Low Frequency of Detection	Retained? (Yes/No)	Discussion
Metals (mg/L)			
Aluminum	No	Yes	22% exceedance of ecological criteria (42/195 samples)
Antimony	Yes	**No**	<1% exceedance of HH criteria (1/1,482 samples)
Arsenic	No	Yes	98% exceedance of HH criteria (1,356/1,390 samples)
Barium	No	Yes	100% exceedance of ecological criteria (200/201 samples)
Boron	No	Yes	100% exceedance of ecological criteria (39/39)
Beryllium	Yes	**No**	<1% exceedance of ecological criteria (5/1,484 samples)
Cadmium	Yes	**No**	<2% exceedance of ecological criteria (22/1,459 samples) <1% exceedance of HH criteria (2/1,459 samples)
Chromium	Yes	Yes	1.6% exceedance of ecological criteria (24/1,503 samples) <1% exceedance of HH criteria (14/1,503 samples)
Chromium – hexavalent	No	Yes	10% exceedance of ecological criteria (5/50 samples)
Copper	Yes	**No**	1% exceedance of ecological criteria (14/1,499 samples)
Iron	No	Yes	6% exceedance of ecological criteria (10/159 samples) 11% exceedance of HH criteria (18/159 samples)
Lead	Yes	**No**	2% exceedance of ecological criteria (25/1,381 samples) <1% exceedance of HH criteria (7/1,381 samples)
Manganese	No	Yes	3% exceedance of ecological criteria (7/219 samples) 6% exceedance of HH criteria (14/219 samples)
Mercury	Yes	**No**	2% exceedance of ecological criteria (9/610 samples)
Selenium	Yes	**No**	<1% exceedance of ecological criteria (1/1,367 samples)
Silver	Yes	**No**	<1% exceedance of ecological criteria (5/1,503 samples)

Table 5-8. Summary of Analytes Compared to Frequency of Exceedance – Surface Water. (2 Pages)

Compound	Low Frequency of Detection	Retained? (Yes/No)	Discussion
Thallium	Yes	**No**	<1% exceedance of human health criteria (5/1,277samples)
Uranium	No	Yes	13% exceedance of ecological criteria (16/125 samples) 8% exceedance of HH criteria (10/125 samples)
Vanadium	No	**No**	3% exceedance of ecological criteria (5/158 samples) 2% exceedance of HH criteria (3/158 samples)
Zinc	Yes	**No**	<1% exceedance of ecological criteria (12/1,500 samples)
Radionuclides (pCi/L)			
Potassium-40	Yes	Yes	9% exceedance of HH criteria (71/775)
Strontium-90	Yes	Yes	<1% exceedance of HH criteria (10/1,240 samples), known site contaminant in groundwater
Tritium	Yes	Yes	1% exceedance of HH criteria (21/1,586 samples), known site contaminant in groundwater
Uranium-234	Yes	Yes	2% exceedance of HH criteria (24/1,147 samples), known site contaminant in groundwater
Uranium-238	Yes	Yes	2% exceedance of HH criteria (24/1,152 samples), known site contaminant in groundwater
Organics (mg/L)			
Carbon Tetrachloride	Yes	**No**	<1% exceedance of HH criteria (1/163 samples)
1,1,2-Trichloroethane (TCA)	No	Yes	6% exceedance of HH criteria (10/164 samples)
1,2-Dichloroethane (DCA)	No	Yes	8% exceedance of HH criteria (13/164 samples)
Chloroform	No	Yes	12% exceedance of HH criteria (19/164 samples)
Tetrachloroethene (PCE)	Yes	**No**	<1% exceedance of HH criteria (1/164 samples)
Trichloroethene (TCE)	No	Yes	15% exceedance of HH criteria (24/164 samples)

Note: Analytes shown in **Bold** font were not retained for further evaluation.
HH = Human Health

Table 5-9. Summary of Sediment Screening Process. (2 Pages)

Compound Exceeding Benchmark	Retained after Background Comparison	Retained after Lab Contaminant Screen	Retained after Frequency of Exceedance	Retained after "other"	Site Analytes for Mapping and Analysis
Aluminum	**No**	–	–	–	–
Arsenic	Yes	Yes	Yes	Yes	Arsenic
Antimony	Yes	Yes	Yes	Yes	Antimony
Barium	Yes	Yes	Yes	Yes	Barium
Cadmium	**No**	–	–	–	–
Chromium	Yes	Yes	Yes	Yes	Chromium
Iron	**No**	–	–	–	–
Manganese	Yes	Yes	**No**	–	–
Mercury	Yes	Yes	**No**	–	–
Nickel	**No**	–	–	–	–
Selenium	Yes	Yes	Yes	Yes	Selenium
Vanadium	Yes	Yes	Yes	Yes	Vanadium
Zinc	**No**	–	–	–	–
PAHs	**No**	–	–	–	–
Pentachlorophenol	Yes	Yes	**No**	–	–
Aroclor 1254	**No**	–	–	Yes. PCB Congener added	PCB congener
Benzoic Acid	**No**	–	–	–	–
Bis(2-ethylhexyl)phthalate	Yes	**No**	–	–	–
Dieldrin	**No**	–	–	–	–
Gamma-BHC	**No**	–	–	–	–
Phenol	**No**	–	–	–	–
4-methyl-2-pentanone	Yes	Yes	Yes	**No.** Common solvent, which does not persist in sediment.	–
Diethylphthalate	**No**	–	–	–	–
Di-n-butylphthalate	**No**	–	–	–	–
Xylenes	Yes	Yes	Yes	**No.** Common solvent, as above	–
2-hexanone	Yes	Yes	Yes	**No.** Common solvent, as above**.**	–

Table 5-9. Summary of Sediment Screening Process. (2 Pages)

Compound Exceeding Benchmark	Retained after Background Comparison	Retained after Lab Contaminant Screen	Retained after Frequency of Exceedance	Retained after "other"	Site Analytes for Mapping and Analysis
Cesium-137	Yes	Yes	**No**	Yes. Added back to list for consistency with 100/300 RA	Cesium-137
Cobalt-60	Yes	Yes	Yes	Yes	Cobalt-60
Europium-152	**No**	–	–	–	–
Strontium-90	Yes	Yes	**No**	–	–
Thorium -232	Yes	Yes	Yes	**No.** Eliminated as non-site-related in the 100/300 RA.	–
Uranium-234	Yes	Yes	Yes	Yes	Uranium-234
Uranium-238	Yes	Yes	Yes	Yes	Uranium-238

- = not applicable
PAH = polyaromatic hydrocarbon
RA = risk assessment

Table 5-10. Summary of Surface Water Screening Process. (2 Pages)

Detected Compound	Retained after Background Comparison	Retained after Lab Contaminant Screen	Retained after Frequency of Exceedance	Retained after "other"	Site Analytes for Mapping and Analysis
Aluminum	Yes	Yes	Yes	Yes	Aluminum
Antimony	Yes	Yes	**No**	–	–
Arsenic	Yes	Yes	Yes	Yes	Arsenic
Barium	Yes	Yes	Yes	Yes	Barium
Beryllium	Yes	Yes	**No**	–	–
Boron	Yes	Yes	Yes	Yes	Boron
Cadmium	Yes	Yes	**No**	–	–
Chromium	Yes	Yes	Yes	Yes	Chromium
Copper	Yes	Yes	**No**	–	–
Chromium – hexavalent	Yes	Yes	Yes	Yes	Chromium – hexavalent
Iron	Yes	Yes	Yes	Yes	Iron
Manganese	Yes	Yes	Yes	Yes	Manganese
Mercury	Yes	Yes	**No**	–	–
Lead	Yes	Yes	**No**	–	–
Selenium	Yes	Yes	**No**	–	–
Silver	Yes	Yes	**No**	–	–
Thallium	Yes	Yes	**No**	–	–
Uranium	Yes	Yes	Yes	Yes	Uranium
Vanadium	Yes	Yes	**No**	–	–
Zinc	Yes	Yes	**No**	–	–
Potassium-40	Yes	Yes	Yes	**No.** Eliminated as non-site-related in the 100/300 RA.	–
Strontium-90	Yes	Yes	Yes	Yes	Strontium-90
Tritium	Yes	Yes	Yes	Yes	Tritium
Uranium-234	Yes	Yes	Yes	Yes	Uranium-234
Uranium-238	Yes	Yes	Yes	Yes	Uranium-238
Bis(2-ethylhexyl) phthalate	Yes	**No**	–	–	–
Pesticides	**No**		–	–	–
Carbon Tetrachloride	Yes	Yes	**No**	–	–

Table 5-10. Summary of Surface Water Screening Process. (2 Pages)

Detected Compound	Retained after Background Comparison	Retained after Lab Contaminant Screen	Retained after Frequency of Exceedance	Retained after "other"	Site Analytes for Mapping and Analysis
1,1,2-Trichloroethane (TCA)	Yes	Yes	Yes	Yes	1,1,2-TCA
1,2-Dichloroethane (DCA)	Yes	Yes	Yes	Yes	1,2-DCA
Chloroform	Yes	Yes	Yes	Yes	Chloroform
Tetrachloroethene (PCE)	Yes	Yes	**No**	–	–
Trichloroethene (TCE)	Yes	Yes	Yes	Yes	TCE
PCBs	No	No	No	PCB congener added	PCB congener

Note: PCBs were not detected in surface water.
- = not applicable
PCB = polychlorinated biphenyl
RA = risk assessment

Table 5-11. Final List of Site Analytes – Sediment.

Metals	Radionuclides
Arsenic	Cesium-137
Antimony	Cobalt-60
Barium	Uranium-234
Chromium	Uranium-238
Selenium	
Vanadium	Organics
	PCB congener

PCB = polychlorinated biphenyl

Table 5-12. Final List of Site Analytes – Surface Water.

Metals	Radionuclides
Aluminum	Strontium-90
Arsenic	Tritium
Barium	Uranium-234
Boron	Uranium-238
Chromium	
Chromium – hexavalent	**Organics**
Iron	1,1,2-Trichloroethane (TCA)
Manganese	1,2-Dichloroethane (DCA)
Uranium	Chloroform
	Trichloroethene (TCE)
	PCB congener

PCB = polychlorinated biphenyl

6.0 SUMMARY AND CONCLUSIONS

The following provides a summary of results and conclusions of this Data Gap Analysis, as well as recommendations for future activities. This Data Gap Analysis study was conducted to review the adequacy of the existing data on the Columbia River, with specific reference to the use of the data in future site characterization and screening-level risk assessment. The Data Gap Analysis was conducted in a process that consisted of the following steps:

Step 1 Compile existing relevant data into one comprehensive database.

Step 2 Update existing conceptual site model: How do contaminants originate and move in the river?

Step 3 Evaluate spatial and temporal distribution of the existing data to determine adequacy of coverage: Are there enough samples in the right places?

Step 4 Define the Primary Study Area for the Data Gap Analysis, based on historical plant operations and river data.

Step 5 Identify Site Analytes for detailed mapping and review.

Step 6 Identify preliminary data gaps for Site Analytes.

6.1 SUMMARY OF RESULTS

The results from Steps 3 through Step 6 are summarized below.

6.1.1 Step 3 – Spatial and Temporal Distribution

Based on the Hanford Site operational history, dam locations, and data density, the river was divided into the following three sections to facilitate assessment, presentation, and discussion:

- River Section I – This section of the Columbia River is upriver from the Hanford Site and extends from the Vernita Bridge (RM 388, considered the upstream boundary of the Hanford Site) to Grand Coulee Dam.

- River Section II – This section of the Columbia River extends from Vernita Bridge (RM 388) downriver to McNary Dam (RM 292). This 154 km (96-mi) section includes the 82 km (51-mi) stretch referred to as the Hanford Reach.

- River Section III – This section of the Columbia River extends from below McNary Dam to the outlet of the Columbia River at the Pacific Ocean.

The conclusions of the spatial and temporal evaluation were as follows.

River Section I - Based on the analysis of the spatial and temporal distribution of sediment and surface water sample locations, there do not appear to be significant data gaps associated with this section of the river. The area around the Priest Rapids pool and upriver from the Vernita Bridge were used to calculate upriver “background” concentrations for the Hanford Site, and data in this area specifically were also sufficient for this purpose.

River Section II - Based on the analysis of the spatial and temporal distribution of sediment and surface water sample locations and analytes within River Section II (Vernita Bridge to McNary Dam), no temporal data gaps were identified. However, three potential data gaps appear based on limited spatial distribution:

1. Sloughs on the left side of the river (sediments and surface water);
2. Islands directly downstream of known source areas (sediments only); and
3. Depositional areas at the upriver end of Lake Wallula (sediments and surface water) and sediment near McNary Dam.

River Section III - Based on the analysis of the spatial and temporal distribution of sediment and surface water sample locations and analytes in the Data Gap Analysis database at the time of this analysis, temporal and spatial-related data gaps may exist in River Section III. However, there are two key mitigating factors:

- Because of the relatively high number of known non-Hanford Site downriver contaminant sources and the fact that the most significant Hanford Site-related contaminants present downriver are very low concentrations of residual radionuclides, it is unlikely additional sampling down river of McNary Dam would be beneficial in conducting the anticipated Hanford Site screening-level risk assessment of the Columbia River.

- EPA Region 10 is currently compiling new and existing data (2004 – 2005) from the lower Columbia River. At the time of this report these data were not published and therefore not included; a review of these data may be helpful during the DQO process.

As stated above, this CRC Data Gap Analysis assumes that near-source areas will pose the highest relative concentration of Hanford Site-related contaminants and therefore present the greatest potential risks. The purpose of this Data Gap Analysis is to determine if there is sufficient data to characterize the effects of the Hanford Site operations on the Columbia River. Therefore, it is focused on those areas that should contain the highest concentration of Hanford Site-related material. While it is not anticipated that additional sampling in River Section III is required, this assumption may be revisited after a review of EPA's lower Columbia River assessment and the DQO processes are completed.

6.1.2 Step 4 – Primary Study Area

The study area for this Data Gap Analysis was determined using six phases:

- Phase I – Compare dam construction, radionuclide release timeline and sedimentation
- Phase II – Review conclusions from previous studies
- Phase III – Normalize historical radionuclide sediment data to 2007 concentrations
- Phase IV – Compare relative inventories behind each dam
- Phase V – Compare normalized inventories to risk screening levels
- Phase VI – Identify Primary Study Area.

Based on this review process, the Primary Study Area was identified as the Columbia River between the Vernita Bridge and McNary Dam. McNary Dam was chosen as the lower boundary of the study area because numerous studies have demonstrated that the highest Hanford Site-related inventory (radionuclides) is present behind this dam, which is the first dam downstream of the Hanford Site. Construction on this dam began in 1954, well before the years of peak

production at the Hanford Site (late 1950s to late 1960s) and so was in place to capture and retain sediments from the Hanford Reach. As a result of subsequent sediment deposition, the radionuclide-containing sediments are now buried beneath several feet of relatively clean sediments.

6.1.3 Step 5 – Site Analytes

The final list of Site Analytes for the Data Gap Analysis was obtained by the process outlined below:

1. Compare maximums to lowest of risk-based human health or ecological values
2. Compare to site-specific upriver background concentrations
3. Remove known laboratory contaminants
4. Evaluate low frequency of exceedance
5. Revise according to additional considerations: groundwater and biota data, site use, etc.

Based on this evaluation, Tables 6-1 and 6-2 identify the final list of Site Analytes for detailed evaluation for sediment and surface water, respectively.

6.1.4 Step 6 – Preliminary Data Gap Analysis

In this step, the Site Analytes from Step 5 were subject to detailed evaluation. This step includes the following types of evaluation:

- Detailed mapping of the location of criteria exceedances of each of the Site Analytes in large scale maps.

- Tabulation and review of the number of exceedances versus the number of detections and the number of samples analyzed.

- Review of sample exceedance locations relative to the location of source areas, sloughs, islands, and known depositional areas for fine-grained sediment.

- Review of sample locations and types relative to the general conclusions about spatial distribution of data derived from Step 3.

- Professional judgment about the adequacy of sample location and density.

The conclusions from this analysis are as follows:

1. A very large volume of data exists for the Columbia River surface water and sediment within the Hanford Reach. Most constituents were analyzed for at least 50 times and, in many cases, hundreds of times.

2. In general, the data set is large enough to represent spatial and temporal trends in the data.

3. Preliminary data gaps are summarized as follows:

    - Sloughs and backwaters on the left shore of the river. Although both surface water and sediment sampling transects have been completed, most samples

were collected on the right side of the river, which forms the site boundary. Fewer data exist for the left side.

- Islands immediately downstream of source areas. As shown by the close-area maps, depositional areas exist around islands downstream of source areas. Some of these island depositional areas have not been fully characterized.

- Locations along the left shore downriver of source areas. River transport mechanisms can disperse sediment throughout the river, and sediment samples on the left shore are lacking downriver of some reactors and the White Bluffs and Hanford Townsites.

- Several irrigation returns throughout the reach, particularly the Saddle Mountain Wasteway.

- Near-shore areas in the Richland area, including surface water in the area of the Richland pump house.

- Downriver in Lake Wallula. Several sampling and coring activities have focused on sediment behind McNary Dam, but fewer sediment samples exist near the headwaters of the lake or along the shorelines or channel in the middle reach of the lake.

- Sediment behind McNary Dam. Additional sediment cores may be needed behind McNary Dam.

4. Nearly all surface water and sediment samples from the Hanford Site have reported nondetect results for PCBs by Method 8082, but PCBs have been detected in fish tissue from within the Hanford Reach. However, the source of PCBs is unclear. PCB contamination exists throughout the entire Columbia River Basin. There are numerous known sources of PCBs both upriver and downriver of the Hanford Site. DOE has recently agreed to conduct additional PCB congener analyses along the Hanford Reach as part of the 100/300 Areas and Inter-Area investigations. The need for additional PCB analysis will be revised during the DQO process, once the additional sampling results are available.

6.2 RECOMMENDATION FOR FUTURE ACTIVITIES

This document is the first step in a series of steps associated with final evaluation of the Columbia River from potential Hanford Site effects. Because a limited amount of additional sampling may be needed, supporting documents will be produced to fully describe the details and intent of additional data collection events.

The next phase in the process is the development of DQOs, which is required by the DOE in planning and coordinating data acquisition for environmental decision making. DQOs are qualitative and quantitative statements that clarify environmental investigation goals, define data needs, specify decision rule criteria and tolerable decision errors, and establish sampling approaches that support the decision-making process. The DQO process emphasizes the use of existing Hanford Site analytical and historical information to reduce costly data-gathering activities.

Summary and Conclusions

The cumulative data from previous investigations, as well as newly acquired data, were evaluated during the development of the Data Gap Analysis study to determine where data gaps exist, what additional data may be required if any, to complete a screening level risk assessment, or whether the current data are of sufficient quantity and quality. The following activities will be performed as part of the subsequent DQO process:

- Evaluation and identification of contaminants that warrant further investigation
- Identification of representative receptors (ecological and human health)
- Identification of applicable exposure pathways and inputs to potential human and ecological receptors within the bounds of the CRC of the RCBRA
- Identification of appropriate field and/or laboratory studies and approaches for characterization of ecological effects, as applicable
- Identification of sampling needs if any (e.g., required sample volumes and weights)
- Identification of data quality requirements.

Data gaps identified as a result of the data gap analysis process described in this report will be further quantified during the DQO process, which will be performed in accordance with EPA's *Guidance for the Data Quality Objectives Process* (EPA 2000). The DQO process is a comprehensive scoping effort to define the problem, further define or refine CSMs and data needs identified in a subsequent RI work plan, and develop an approach to fill data gaps by determining the scale and constraints of required sampling. The DQO process also provides a systematic procedure for defining the criteria that a data collection design should satisfy, which includes the following:

- The location, frequency, and number of samples to be collected
- The tolerable level of decision error for the study.

The DQO process is designed to ensure that the type, quantity, and quality of environmental data used in decision making will be appropriate for the intended application, resulting in environmental decisions that are technically and scientifically sound and legally defensible.

Following the DQO process, the following near-term steps are anticipated:

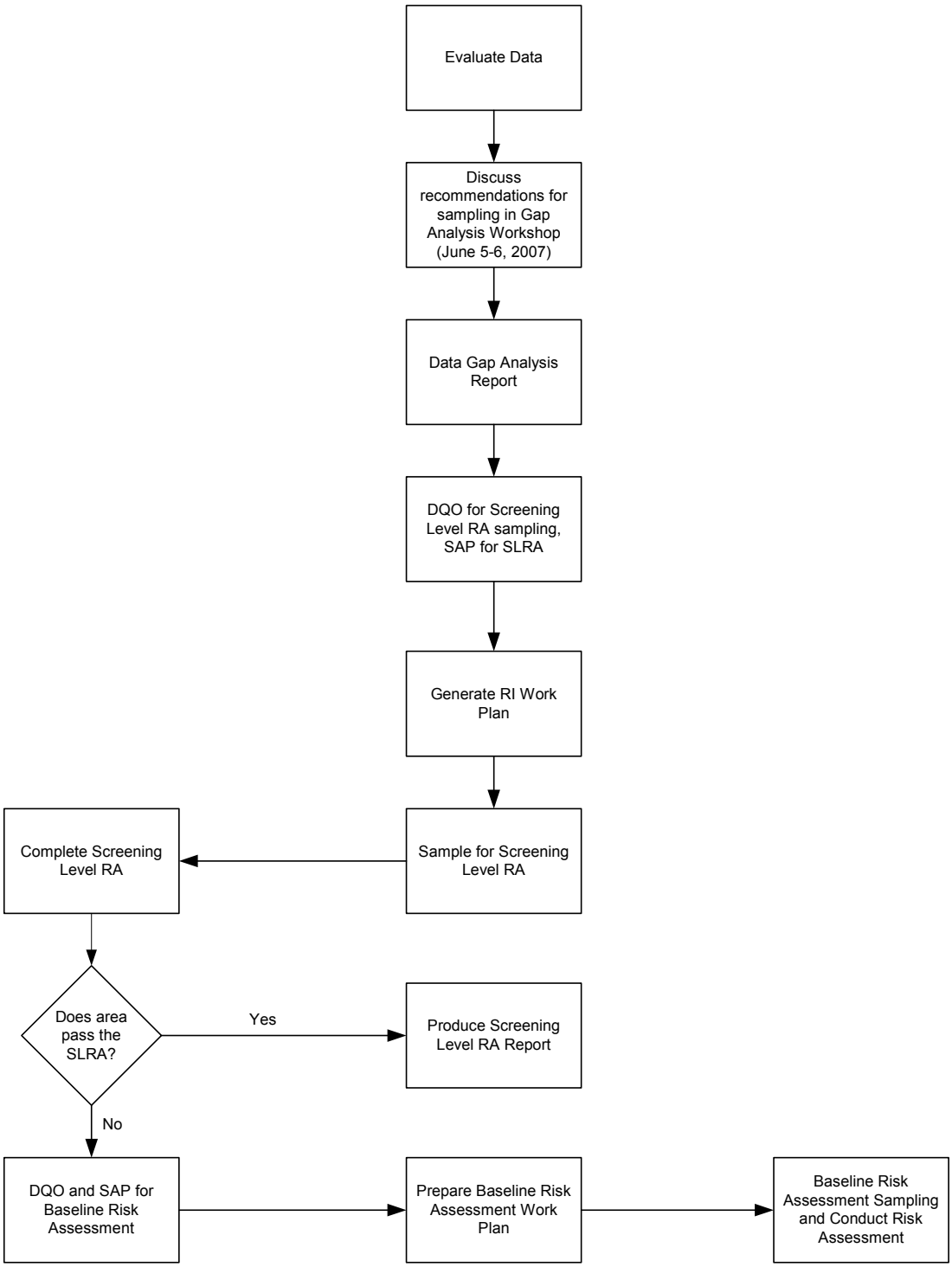
Work Plan: A RI work plan, including a sampling and analysis plan, will be prepared to provide the details of sample collection and analysis.

Site Sampling: Site sampling, the actual collection of surface water and sediment samples as needed, will be conducted after the previous two documents have been approved.

Screening-Level Risk Assessment: After the sampling data have been obtained and validated, the screening-level human health and ecological risk assessments will be completed.

This process is outlined in Figure 6-1. Additional studies and plans will follow as appropriate.

Figure 6-1. Columbia River Component Path Forward.



RA - Risk Assessment
SAP - Sampling and Analysis Plan
SLRA - Screening Level Risk Assessment
RI - Remedial Investigation
DQO - Data Quality Objectives

Table 6-1. Final List of Site Analytes - Sediment.

Metals	Radionuclides
Arsenic	Cesium-137
Antimony	Cobalt-60
Barium	Uranium-234
Chromium	Uranium-238
Selenium	
Vanadium	Organics
	PCB congener

PCB = polychlorinated biphenyl

Table 6-2. Final List of Site Analytes – Surface Water.

Metals	Radionuclides
Aluminum	Strontium-90
Arsenic	Tritium
Barium	Uranium-234
Boron	Uranium-238
Chromium	
Chromium – hexavalent	**Organics**
Iron	1,1,2-Trichloroethane (TCA)
Manganese	1,2-Dichloroethane (DCA)
Uranium	Chloroform
	Trichloroethene (TCE)
	PCB congener

PCB = polychlorinated biphenyl

7.0 REFERENCES

ANL, 2006, *RESRAD Biota for Windows*, Version 1.21 (May 10, 2006), Environmental Science Division for Argonne National Laboratory for the U.S. Department of Energy, Argonne, Illinois (http://web.ead.anl.gov/resrad/home2/).

BHI-01757, 2005, *DQO Summary Report for the 100 Area and 300 Area Component of the RCBRA*, Rev. 0, Bechtel Hanford, Inc., Richland, Washington.

BNWL-2305, 1977, *Association of Hanford Origin Radionuclides with Columbia River Sediment*, Battelle Pacific Northwest Laboratory, Richland, Washington.

CH2MHill, 2006, *Phase I Sediment Sampling Data Evaluation, Upper Columbia River Site, CERCLA RI/FS (Draft Final)*, prepared for the U.S. Environmental Protection Agency, Region 10.

CCRH, 2007, *Promoting the Study of the Columbia River Basin History*, Center for Columbia River History, Vancouver, Washington, http://www.ccrh.org/river/history.php (accessed June 1, 2007).

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 USC 9601, et seq.

CRWMP, 2006, *Water Supply Inventory and Long-Term Water Supply and Demand Forecast Report, Chapter 3: Columbia River Baseline Assessment*, Washington State Department of Ecology, Columbia River Water Management Program, Olympia, Washington.

DOE/RL-96-17, 2005, *Remedial Design Report/Remedial Action Work Plan for the 100 Area*, Rev. 5, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-97-1047, 2002, *History of the Plutonium Production Facilities at the Hanford Site Historic District, 1943 – 1990*, U.S. Department of Energy, Richland Operations Office, Hanford Cultural and Historical Resources Program, Richland, Washington.

DOE/RL-2004-49, 2004, *Columbia River Component of the River Corridor Baseline Risk Assessment: Basis and Assumptions on Project Scope,* Rev. 0, U.S, Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-2005-42, 2006, *100 Area and 300 Area Component of the RCBRA Sampling and Analysis Plan,* Rev. 1, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-2005-49, *RCBRA Stack Air Emissions Deposition Scoping Document,* Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-2007-21, 2007, *Risk Assessment Report for the 100 Area and 300 Area Component of the River Corridor Baseline Risk Assessment*, Draft A, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

References

Ecology, 1981, *Irrigation Return Flow Quality-South Columbia Basin Irrigation District*, Publication No. 81-E16 (WA-36-1010), Washington State Department of Ecology, Olympia, Washington.

Ecology, 1997, *Creation and Analysis of Freshwater Sediment Quality Values in Washington State,* Publication No. 97-323a, Washington State Department of Ecology, Olympia, Washington.

Ecology, 2006, "Water Quality Standards for Surface Waters of the State of Washington," Chaper 173-201A, *Washington Administrative Code*, Washington State Department of Ecology, Olympia, Washington (updated November 20, 2006).

Ecology, 2007, *Cleanup Levels and Risk Calculation (CLARC) Table, Method B Surface Water*, Washington State Department of Ecology, Olympia, Washington.

Ecology, EPA, and DOE, 1989, *Hanford Federal Facility Agreement and Consent Order*, 2 vols., as amended, Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington.

EPA, 1996, Soil Screening Guidance: User's Guide, Office of Solid Waste and Emergency Response, OSWER 9255.4-23. Accessed online at: http://www.epa.gov/superfund/health/conmedia/soil/index.htm#fact.

EPA, 1999, *National Functional Guidelines for Organic Data Review*, EPA540/R-99/008 U.S. Environmental Protection Agency Contract Laboratory Program, Washington, D.C.

EPA, 2000, *Soil Screening Guidance for Radionuclides: User's Guide*, EPA/540-R-00-007, U.S. Environmental Protection Agency, Washington, D.C.

EPA, 2002, *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites*, OSWER 9355.4-24, U.S. Environmental Protection Agency, Washington, D.C.

EPA, 2003, *Federal Maximum Contaminant Levels (MCLs), National Primary Drinking Water Regulations,* EPA 816-F-03-016, U.S. Environmental Protection Agency, Washington, D.C.

EPA, 2004a, *EPA to Investigate Upper Columbia River Pollution,* Environmental Fact Sheet, U.S. Environmental Protection Agency, Region 10, Olympia, Washington.

EPA, 2004b, *Preliminary Remediation Goals (PRGs) Table*, U.S. Environmental Protection Agency, Region 9, San Francisco, California (http://www.epa.gov/region09/waste/sfund/prg/files/prgtable2004.xls).

EPA, 2004c, *Sediment Sampling Approach and Rationale, Upper Columbia River,* Technical Briefing Sheet, U.S. Environmental Protection Agency, Region 10, Olympia, Washington.

EPA, 2006a, *2006 Edition of the Drinking Water Standards and Health Advisories*, EPA 822-R-06-013, Office of Water, U.S. Environmental Protection Agency, Washington, D.C. (http://www.epa.gov/waterscience/criteria/drinking/)

References

EPA, 2006b, *National Recommended Water Quality Criteria (NRWQC), Human Health for Consumption of Water and Organism Values*, U.S. Environmental Protection Agency, Office of Water/Office of Science and Technology, Washington, D.C.

EPA, 2006c, *Site Description: Midnite Mine, Washington*, U.S. Environmental Protection Agency, Region 10, Olympia, Washington.

EPA, 2007a, *Memorandum from Michael Cox, Manager, Risk Evaluation Unit, Office of Environmental Assessment, to Laura Castrilli, Corrective Action & Permits Team, et al., re: Recommendations for Human Health Risk-based Chemical Screening and Related Issues at EPA Region 10 CERCLA and RCRA Sites*, EPA Region 10, Seattle, Washington (6 pp.), April 17.

EPA, 2007b, *Media Specific Screening Values,* U.S. Environmental Protection Agency, Region 6, Dallas, Texas.

Farris, W.T., et al., 1994, *Columbia River Pathway Dosimetry Report, 1944-1992*, PNWD-2227 HEDR, UC-000, Battelle Pacific Northwest Laboratories, Richland, Washington, July 1994.

FH, 1999, *Groundwater/Vadose Zone Integration Project Preliminary System Assessment Capability Concepts for Architecture, Platform, and Data Management, Appendix E: Columbia River Conceptual Model,* Fluor Hanford, Inc., Richland, Washington.

Hart Crowser, 1987, *Feasibility Study,* Aluminum Company of America, Vancouver Operations, Vancouver, Washington.

HW-49195, 1957, *The Turbulent Diffusion of River Contaminants,* Hanford Atomic Products Operation, General Electric Company, Richland, Washington.

HW-83614, 1964, *Progress in Studies of Radionuclides in Columbia River Sediment; A Summary of Hanford Achievements in this Program under General Electric, 1963-1964*, Hanford Atomic Products Operation, General Electric Company, Richland, Washington.

Ingersoll, C. G., P. S. Haverland, E. L. Brunson, T. J. Canfield, F. J. Dwyer, C. E. Henke, N. E. Kembel, D. R. Mount, and R. G. Fox, 1996, *Calculation and Evaluation of Sediment Effect Concentrations for the Amphipod Hyalella azteca and the Midge Chironomus riparius,* J. Great Lakes Res. 22(3): 602-623.

LANL, 2005, *Ecorisk Database* (Release 2.2), Los Alamos National Laboratory, RRES-RS Project, Los Alamos, New Mexico.

ODEQ, 2001, *Guidance for Ecological Risk Assessment Level II – Screening Level Values*, Oregon Department of Environmental Quality, Salem, Oregon. (http://www.deq.state.or.us/ wmc/documents/eco-2slv.pdf; last accessed Aug 13, 2003).

OHD, 1994, *Environmental Radiological Surveillance Report on Oregon Surface Waters 1961-1993, Volume I*, Oregon Health Division Radiation Protection Services, Portland, Oregon.

References

Persaud, D., R. Jaagumagi, and A. Hayton, 1993, *Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario*, Ontario Ministry of Environment and Energy report, Ontario, Canada.

PNNL-7500, 1990, *1988 Hanford Riverbank Springs Characterization Report*, Pacific Northwest Laboratory, Richland, Washington.

PNNL-11795, 1998, *Hanford Site: Environmental Report for Calendar Year 1997*, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-14027, 2002, *An Initial Assessment of Hanford Impact Performed with the System Assessment Capability,* Pacific Northwest National Laboratory, Richland, Washington.

PNNL-14824, 2006, *River Data Package for Hanford Assessments,* Pacific Northwest National Laboratory, Richland, Washington.

PNNL-15222, 2005, *Hanford Site Environmental Report for Calendar Year 2004*, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-15226, 2005, *Hydrodynamic Simulation of the Columbia River, Hanford Reach, 1940-2004,* Pacific Northwest National Laboratory, Richland, Washington.

PNNL-15670, 2006, *Hanford Site Groundwater Monitoring for Fiscal Year 2005*, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-15892, 2006, *Hanford Site Environmental Report for Calendar Year 2005*, Pacific Northwest National Laboratory, Richland, Washington.

PNWD-2227, 1994, *Columbia River Pathway Dosimetry Report, 1944-1992*, Hanford Environmental Dose Reconstruction Project, Battelle Pacific Northwest Laboratories, Richland, Washington.

RAC, 2002, *FINAL REPORT; A Risk-Based Screening Analysis for Radionuclides Released to the Columbia River from Past Activities at the U.S. Department of Energy Nuclear Weapons Site in Hanford, Washington*, Risk Assessment Corporation, Neeses, South Carolina.

Resource Conservation and Recovery Act of 1976, 42 USC 6901, et seq.

Serdar, D., K. Kristin, and P. Hallinan, 2006, *Spokane River PCBs Total Maximum Daily Load, Water Quality Improvement Report, June*, Publication No. 06-03-024, Watershed Ecology Section, Washington State Department of Ecology, Olympia, Washington.

Suter, G. W., II, and C. L. Tsao, 1996, *Toxicological Benchmarks for Screening of Potential Contaminants of Concern for Effects on Aquatic Biota on Oak Ridge Reservation: 1996 Revision*, ES/ER/TM-96/R2, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

USFWS, 2003, *Evaluation of the Effect of Water Management on Fall Chinook Spawning and Rearing Habitat, and on Stranding and Entrapment of Juvenile Fall Chinook*, Columbia River Fisheries Program Office, U.S. Department of the Interior Fish and Wildlife Services, Vancouver, Washington.

References

USGS, 2006, *USGS Surface Water Annual Statistics for Washington,* http://waterdata.usgs.gov/wa/nwis/annual?.

WAC 173-201A, "Water Quality Standards for Surface Waters of the State of Washington," *Washington Administrative Code*, Washington State Department of Ecology, Olympia, Washington.

WHC-SA-1989-FP, 1993, *Sediment Quality and Ecorisk Assessment Factors for a Major River System*, V. G. Johnson, J. J. Wagner, N. H. Cutshall, Westinghouse Hanford Company, Richland, Washington.

WCH-64, 2006, *Existing Source Information Summary Report Compilation/Evaluation Effort: December 2004 to September 2005, Columbia River Component of the River Corridor Baseline Risk Assessment,* Rev. 0, Washington Closure Hanford, Richland, Washington.

WCH-71, 2007, *Integrated Strategy for Achieving Final Cleanup Decisions in the River Corridor,* Rev. 0, Washington Closure Hanford, Richland, Washington.

WCH-91, 2006, *Columbia River Component Data Evaluation Summary Report*, Rev. 0, Washington Closure Hanford, Richland, Washington.

WDOH, 1994, *Special Report; Radioactivity in Columbia River Sediments and Their Health Effects*, Washington State Department of Health, Olympia, Washington.

WDOH, 2005, *Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003*, DOH 320-034, Washington State Department of Health, Olympia, Washington.

References

APPENDIX A

LIST OF BIBLIOGRAPHIC SOURCES

Table A-1. List of Bibliographic Sources. (20 Pages)

Title	Author	Document Date	Electronic/ Hardcopy	Document Number	Received From
A One Year Study of Radioactivity in Columbia River Fish	Herde, K.E. (General Electric Company)	10/25/1948	electronic	HW-11344	DOE Reading Room
Columbia River Survey 1951, 1952, 1953	General Electric	7/21/1954	electronic	HW-32506	DOE Reading Room
Temperature of the Columbia River Between Priest Rapids, Washington and Umatilla Oregon	R.E. Rostenbach	10/5/1955	electronic	HW-39347	DOE Reading Room
Chromium Toxicity in Plants	J.H. Rediske	5/7/1956	electronic	HW-42969	DOE Reading Room
Review and Analysis of Hydrological and Radiochemical Columbia River Surveys	Bogan, R.H. (Hanford Atomics Product Operation)	8/29/1956	electronic	HW-45124	DOE Reading Room
Radioecology at Hanford	J.J. Davis	1/1/1960	electronic	HW-SA-1766	DOE Reading Room
Measurements of Eu152 and Tb160 in Reactor Effluent Water	R.W. Perkings for General Electric	2/15/1960	electronic	HW-63910	DOE Reading Room
Sources of Radionuclides to the Columbia River	Hanford	11/1/1960	electronic	NONE	DOE Reading Room
Zinc-65 and Chromium-51 in Foods and People	Perkins, R. W.; J. M. Nielsen; W. C. Roesch (General Electric)	12/23/1960	electronic	HW-SA-1928	DOE Reading Room
Compilation of Basic Data Relating to the Columbia River Section 1 of 2	J.K. Soldat	11/11/1961	electronic	HW-69368-Sec 4, 5	DOE Reading Room
Compilation of Basic Data Relating to the Columbia River Section 2 of 2	J.K. Soldat	11/11/1961	electronic	HW-69368-Sec 4, 5	DOE Reading Room
Compilation of Basic Data Relating to the Columbia River Section 8 Dispersion of Reactor Effluent in the Columbia River	J.K. Soldat	11/11/1961	electronic	HW-69368-Sec 4, 5	DOE Reading Room
Compilation of Basic Data Relating to the Columbia River Section 4 Chemical Characteristics Part I	J.P. Corlay, H.A. Kramer, & J.K. Soldat	11/11/1961	electronic	HW-69368-Sec 4, 5	DOE Reading Room

[a] Request to WCH

Table A-1. List of Bibliographic Sources. (20 Pages)

Title	Author	Document Date	Electronic/ Hardcopy	Document Number	Received From
Compilation of Basic Data Relating to the Columbia River Section 4 Chemical Characteristics Part II	J.P. Corlay, H.A. Kramer, & J.K. Soldat	11/11/1961	electronic	HW-69368-Sec 4, 5	DOE Reading Room
Compilation of Basic Data Relating to the Columbia River Section 6 Radioactivity Part I of II	L.A. Carter	11/11/1961	electronic	HW-69368-Sec 4, 5	DOE Reading Room
Compilation of Basic Data Relating to the Columbia River Section 6 Radioactivity Section 1 of 3	L.A. Carter	11/11/1961	electronic	HW-69368-Sec 4, 5	DOE Reading Room
Compilation of Basic Data Relating to the Columbia River Section 6 Radioactivity Section 2 of 3	L.A. Carter	11/11/1961	electronic	HW-69368-Sec 4, 5	DOE Reading Room
Compilation of Basic Data Relating to the Columbia River Section 6 Radioactivity Section 3 of 3	L.A. Carter	11/11/1961	electronic	HW-69368-Sec 4, 5	DOE Reading Room
Environmental Behavior of Chromium and Neptunium	Foster, R.F. (Radiation Protection Operation, Hanford Laboratories, General Electric Company)	1962	electronic	HW-SA-2266	DOE Reading Room
Relationships Between the Concentration of Radionuclides in the Columbia River Water and Fish	Foster, R.F. and D. McConnon (General Electric Company)	7/25/1962	electronic	HW-SA-2688	DOE Reading Room
Dose-Rate Measurements of Beaches and Islands on the Columbia River Between Ringold and Richland	McConnon, D. (Hanford Atomic Products Operation)	8/10/1962	electronic	HW-72229	DOE Reading Room
Hanford Radiological Sciences Research and Development Annual Report for 1962	Hanford Laboratories	1/1/1963	electronic	HW-77609	Received from WCH
Preliminary Measurements of the Adsorption of Reactor Effluent Water Radionuclides by Columbia River Particulate Material	Humphreys, L.L. and R.W. Perkins (Hanford Atomics Product Operation)	10/16/1963	electronic	HW-79279	DOE Reading Room

Table A-1. List of Bibliographic Sources. (20 Pages)

Title	Author	Document Date	Electronic/ Hardcopy	Document Number	Received From
Progress in Studies of Radionuclides in Columbia River Sediments; A Summary of Hanford Achievements in this Program Under General Electric, 1963-1964	Nelson, J.L., R.W. Perkins and J.M. Nielsen (Hanford Atomics Product Operation)	12/1/1964	electronic	HW-83614	DOE Reading Room
Reactions of Radionuclides from the Hanford Reactors with Columbia River Sediments	Nelson, Jack L., Richard Perkins, J. Nielson (Battelle Memorial Institute) and W.L. Haushild (US Geological Survey)	1966	hardcopy	BNWL-SA-317	Received from WCH
Radiation Survey of Islands and Beaches on the Columbia River Between Hanford and the 300 Area	Bovingdon, J.R. (PNL)	3/15/1966	electronic	BNWL-CC-1386	DOE Reading Room
Accumulation of Radionuclides in Bed Sediments of the Columbia River between the Hanford Reactors and McNary Dam	Nelson, J.L., and W.L. Haushild (Water Resources Research)	6/2/1969	hardcopy	BNWL-SA-2571	Received from WCH, Water Resources Research; Vol 6, 130-137
Recreational Use of the Columbia River - Evaluation of Environmental Exposure	Honstead, J.F. (PNL)	10/7/1969	electronic	BNWL-CC-2299	DOE Reading Room
Radiological Consideration of Opening the Columbia River for Recreational Purposes - Ringold to 100-F Area	Denham, D.H. and W.L. Fisher (PNL)	12/22/1969	electronic	BNWL-CC-2363	DOE Reading Room
Radiological Studies of the Columbia River Part I	Watson, D.G., C.E. Cushing, C.C. Coutant, W.L. Templeton (PNL)	5/1/1970	electronic	BNWL-1377-Pt. 1	DOE Reading Room
Radiological Considerations of Opening the Columbia River for Public Access Upstream from 100-F Area Part I	Fisher, W.L. (PNL)	3/1/1971	electronic	BNWL-B-71-PART I	DOE Reading Room

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Title	Author	Document Date	Electronic/ Hardcopy	Document Number	Received From
Radiological Considerations of Opening the Columbia River for Public Access Upstream from 100-F Area Part II	Fisher, W.L. (PNL)	3/1/1971	electronic	BNWL-B-71-PART II	DOE Reading Room
Radionuclide Concentrations in a Recent McNary Dam Sediment Core	Fisher, W.L. (PNL)	6/16/1971	electronic	BNWL-C-74	DOE Reading Room
Environmental Studies Using Nuclear Techniques	PNL	1/1/1972	hardcopy	NONE	American Nuclear Society
Association of Long-Lived Radioactivity with Sediment Along the Columbia River Shoreline, Islands, Bottom and Slough Areas	Fix, J.J. (PNL)	4/1976	electronic & hardcopy	BNWL-SA-5484	Received from WCH
Association of Hanford Origin Radionuclides with Columbia River Sediment	Robertson, D.E. and J.J. Fix (PNL)	8/1/1977	electronic & hardcopy	BNWL-2305	DOE Reading Room
Overview of Cultural Resources on the Hanford Reservation in South Central Washington State	Rice, D.G.	1980	electronic	NONE	DOE Reading Room
Radiological Survey of Exposed Shorelines and Islands of the Columbia River Between Vernita and the Snake River Confluence	Sula, M.J. (PNL)	4/1/1980	electronic & hardcopy	PNL-3127	DOE Reading Room / Received from WCH
Chromium species in the Columbia River and Estuary	R.E. Cranston and J.W. Murray	7/3/1980	electronic	NONE	Limnol. Oceanogr. 25(6), 1980. 1104-1112
Wildlife Usage, Threatened and Endangered Species and Habitat Studies of the Hanford Reach, Columbia River, Washington	Fickeisen, D.H., R.E. Fitzner, R.H. Sauer and J.L. Warren (PNL)	10/1/1980	electronic	NONE	Received from WCH
Hanford-Derived Plutonium in Columbia River Sediments	Beasley, T.M., L.A. Ball, J.E. Andrews III, and J.E. Halverson	11/20/1981	electronic	NONE	DOE Reading Room, Science, Vol 214

Table A-1. List of Bibliographic Sources. (20 Pages)

Title	Author	Document Date	Electronic/ Hardcopy	Document Number	Received From
The Non-Fisheries Biological Resources of the Hanford Reach of the Columbia River	Rickard, W.H., W.C. Hanson, and R.E. Ritzner (Northwest Science, Battelle Pacific Northwest Laboratories)	1982	electronic	PNL-SA-8423	DOE Reading Room, Northwest Science, Vol. 56, No. 1, 1982
List of Industrial Outfalls on the Columbia River	Joy, J. (WDOE)	3/24/1982	electronic	No. 82-e22	WDOE
Unsteady-Flow Model of Priest Rapids Dam Releases at Hanford Reach, Columbia River, Washington	Sneider, S.C. and R.L. Skaggs (PNL)	2/1/1983	hardcopy	PNL-4527	Received from WCH
Inventories of Pu, Am, Cs, and Co in Columbia River Sediments from Hanford to the Columbia River Estuary	Beasley, T.M. and C.D. Jennings (Oregon State University)	1984	electronic	NONE	Received from WCH; Environmental Science & Technology, Vol 18, #3, 207-212
Basic Water Monitoring Program Fish Tissue and Sediment Sampling for 1984	Hopkins, B.S., D. Clark, M. Schlender and M. Stinson (WDOE)	11/1/1985	electronic	No. 85-7	download from WDOE
Mid-Columbia River Feasibility Study: Physical and Chemical Analyses of Hanford Reach Sediments	Damkaer, David and Douglas Dey (US Army Corps of Engineers)	3/1/1987	electronic	NONE	downloaded 4/17/07 and USACE
Pesticides/PCBs Analysis of McNary Pool Fish	Johnson, A. and Dale Norton (WDOE)	9/22/1988	electronic	NONE	DOE Reading Room
Screening Survey for Chemical Contaminants and Toxicity in Sediments at Five Lower Columbia River Ports, September 22-24, 1987	Johnson, A. and Dale Norton (WDOE)	12/1/1988	electronic	No. 88-e15	DOE Reading Room
The vertical distribution of selected trace metals and organic compounds in bottom materials in the proposed lower Columbia River export channel, Oregon.	G.J. Fuhrer and A.J. Horowitz (US Geological Survey)	1/1/1989	electronic	WRIR-88-4099	Received from WCH

Table A-1. List of Bibliographic Sources. (20 Pages)

Title	Author	Document Date	Electronic/ Hardcopy	Document Number	Received From
Trends in Radionuclide Concentrations for Selected Wildlife and Food Products Near the Hanford Site from 1971 through 1988	Eberhardt, L.E., L.L. Cadwee,, K.R. Price, and D.W. Carlile	9/1/1989	electronic	PNNL-6992	Pacific Northwest National Laboratory, PNNL-6992
Past and Present Water-Quality Conditions in the Hanford Reach of the Columbia River	Becker, C.D. and R.H. Gray	6/1/1990	electronic	PNL-SA-17509	DOE Reading Room
1988 Hanford Riverbank Springs Characterization Report	Dirkes, R.L. (Pacific Northwest Laboratory)	12/1/1990	electronic	PNL-7500	DOE Reading Room
Polychlorinated Dioxins and Furans in Lake Roosevelt (Columbia River) Sportfish, 1990	Johnson, A., D. Serdar and S. Magoon (WDOE)	3/1/1991	electronic	No. 91-49	DOE Reading Room
Second Progress Report on Ecology's Dioxin/Furan Survey of the Middle Columbia River	Serdar, D., A. Johnson, and S. Magoon (WDOE)	4/1/1991	electronic	NONE	Washington State Department of Ecology
PCDDs/PCDFs in Columbia River Suspended Particulate Matter	Johnson, A., D. Serdar and K. Seiders (WDOE)	5/28/1991	electronic	NONE	Washington State Department of Ecology
Metal and Fecal Coliform Concentrations in the Lower Columbia River	Johnson, A. and B. Hopkins (WDOE)	5/31/1991	electronic	NONE	Washington State Department of Ecology
Reynolds Metal Company Class II Inspection February 1990	Heffner, M. (WDOE)	6/1/1991	electronic	NONE	Washington State Department of Ecology
Results of Screen for EPA Xenobiotics in Sediment and Bottom Fish from Lake Roosevelt (Columbia River)	Johnson, A. (WDOE)	7/22/1991	electronic	NONE	Washington State Department of Ecology
Sediment Cleanup Standards User Manual	Unknown	12/1/1991	electronic	NONE	Washington State Department of Ecology, Sediment Management Unit
Methodology for Estimating Radiation Dose Rates to Freshwater Biota Exposed to Radionuclides in the Environment	Blaylock, B.G., Frank, M.L., O'Neal, B.R. (Lockeed Martin Energy Systems)	1993	electronic	ES-ER-TM-78	Received from WCH

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Title	Author	Document Date	Electronic/ Hardcopy	Document Number	Received From
Class II Inspection of the Boise Cascade Pulp & Paper Mill, Wallula, Washington - April 1992	A. Johnson and M. Heffner (WDOE)	2/1/1993	electronic	No. 93-e33	Washington State Department of Ecology 93-e33.
Project Summary for Columbia Aluminum Company, Goldendale, Washington Class II Inspection, May 1991	Andreasson, J. and M. Heffner (WDOE)	2/1/1993	electronic	93-e00-CR-1020	WDOE
Sediment Quality and Ecorisk Assessment Factors for a Major River System	Johnson, V.G., J.J. Wagner, and N.H. Cutshall (Westinghouse Hanford Company)	8/1/1993	electronic	WAC-SA-1989-FP	osti.gov
Irrigon Boat Basin Sediment Evaluation	Branch, W.E. (USACE)	8/30/1993	electronic	1110-2-1150	USACE
Investigation of Exposure Rates and Radionuclide and Trace Metal Distributions Along the Hanford Reach of the Columbia River	Cooper, A.T. and R.K. Woodruff (PNL)	9/1/1993	electronic	PNL-8789	DOE Reading Room & Received from WCH
100 Area Columbia River Sediment Sampling	Weiss, S.G. (Westinghouse Hanford Company)	9/8/1993	electronic	WHC-SD-EN-TI-198	DOE Reading Room / Received from WCH
Radionuclide Concentrations in White Sturgeon from the Columbia River	Dauble, D.D., K.R. Price and T.M. Poston (PNL)	11/1/1993	electronic	PNL-8221-Rev. 1	Hanford Technical Library
Appendix V: Snake and Columbia Rivers Sediment Sampling Project	Pinza, et al (USACE)	12/1/1993	electronic	NONE	downloaded 4/17/07
Hanford Site Background: Part I, Soil Background for Nonradioactive Analytes Vol 1 of 2	Unknown	3/1/1994	electronic	DOE/RL-92-24-Rev. 3	DOE Reading Room
Hanford Site Background: Part I, Soil Background for Nonradioactive Analytes Vol 2 of 2	Unknown	3/1/1994	electronic	DOE/RL-92-24-Rev. 2	DOE Reading Room
Radioactivity in Columbia River Sediments and Their Health Effects	Wells, D.	3/1/1994	electronic & hardcopy	NONE	Washington State Department of Health, Division of Radiation Protection

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Title	Author	Document Date	Electronic/ Hardcopy	Document Number	Received From
Data Compendium for the Columbia River Comprehensive Impact Assessment	Eslinger, P.W., L.R. Huesties, A.D. Maughan, T.B. Miley, and W.H. Walters (Pacific Northwest National Laboratory)	4/1/1994	electronic	PNL-9785	DOE Reading Room
Hanford Reach of the Columbia River Comprehensive River Conservation Study and Environmental Impact Statement Volume I	Odegaard, C.H.	6/1/1994	electronic	NONE	DOE Reading Room
Hanford Reach of the Columbia River Comprehensive River Conservation Study and Environmental Impact Statement Volume II	Unknown	6/1/1994	electronic	NONE	DOE Reading Room
Trends in Radionuclide Concentrations in Hanford Reach Fish, 1982 Through 1992	Poston, T.M. (PNL)	6/1/1994	electronic	PNL-9960	PNNL
Columbia River Pathway Dosimetry Report, 1944-1992	Farris, W.T., B.A. Napier, J.C. Simpson, S.F. Snyder, and D.B. Shipler (PNL)	7/1/1994	electronic	PNWD-2227-HEDR DRAFT	DOE Reading Room
Factors Affecting the Quality of Fish Caught by Native Americans in the Zone 6 Fishery and 1991 Through 1993	Abernethy, C.S. (PNL)	9/1/1994	electronic & hardcopy	PNL-10093	DOE Reading Room & WDOE
Zinc, Copper, Lead, and Cadmium Concentrations in Four Washington Rivers	A. Johnson	10/1/1994	electronic	#94-58	Washington State Department of Ecology #94-58
Measurement of Environmental Radiation Exposure Rates from Vernita, Hanford Reach, and Richland Area Shores	Cooper, A.T. (PNL)	1995	electronic	PNL-8789 Addendum 1	Received from WCH

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Title	Author	Document Date	Electronic/ Hardcopy	Document Number	Received From
Preliminary Determination of Chromium Concentration within Pore Water and Embryonic Chinook Salmon at Hanford Reach Spawning Area in Proximity to 100 HR 3 Operable Unit	Hope, S.J. (Bechtel Hanford, Inc)	1995	electronic	BHI-00156	Received from WCH
Reconnaissance Investigation of Water Quality, Bottom Sediment, and Biota Associated with Irrigation Drainage in the Columbia Basin Project, Washington 1991-1992	Embrey, S.S. and E.K. Block (US Geological Survey)	1995	hardcopy	USGS 95-4007	Received from WCH
Environmental Monitoring of Columbia River Sediments: Grain-Size Distribution and Contaminant Association	Blanton, M.L., W.W. Gardiner, R.L. Dirkes (Pacific Northwest Laboratory)	4/1/1995	electronic & hardcopy	PNL-10535	Received from WCH
GIS Analysis, Yakima River Suspended Sediment TMDL Evaluation	Tooley, J.E. (Department of Ecology)	6/5/1995	electronic	95-e17	WDOE
Cobalt-60 Specks in the Columbia River and 100-D Island Discrete Radioactive Particles Data Quality Objectives (DQO) Process	Powaukee, D.L.	7/7/1995	electronic	CCN 41738	Received from WCH
Cobalt-60 Specks in the Columbia River and 100-D Island Discrete Radioactive Particles (DRPs) Data Quality Objectives (DQO) Process	Erickson, J.K.	8/15/1995	electronic	CCN 41862	Received from WCH
In-Water Restoration Between Miller Sands and Pillar Rock Island, Columbia River: Environmental Surveys, 1992-1993	NOAA	9/1/1995	electronic	NONE	University of Washington, SH11.A5 N635 no. 21-24
Nonradiological Chemical Pathway Analysis and Identification of Chemicals of Concern for Environmental Monitoring at the Hanford Site	Blanton, M.L., A.T. Cooper, K.J. Castleton (Battelle Memorial Institute)	11/1/1995	electronic	PNL-10714	downloaded 4/17/07

Table A-1. List of Bibliographic Sources. (20 Pages)

Title	Author	Document Date	Electronic/ Hardcopy	Document Number	Received From
Pore Water Chromium Concentrations at 100-H Reactor Area Adjacent to Fall Chinook Salmon Spawning Habitat of the Hanford Reach, Columbia River	Hope, S.J. and R.E. Peterson	12/1/1995	electronic	BH1-00345-Rev. 1	DOE Reading Room
Species for the Screening Assessment; Columbia River Comprehensive Impact Assessment	Becker, J.M., C.A. Brandt, D.D. Dauble, A.D. Maughan, and T.K. O'Neil (USDOE)	1996	electronic	DOE/RL-96-16-B DRAFT	Received from WCH
The Health of the River 1990-1996 Integrated Technical Report	Tetra Tech	5/20/1996	electronic	TC-0253-01	Received from WCH
Radionuclide Adsorption Distribution Coefficients Measured in Hanford Sediments for the Low Level Waste Performance Assessment Project	Kaplan, D.I., R.J. Serne, A.T. Owen, J. Conca, T.W. Wietsma, T.L. Gervais (PNL)	8/1/1996	electronic	PNNL-11485	DOE Reading Room
Hanford Site Background: Part II, Soil Background for Radionuclides	Unknown	9/1/1996	electronic	DOE/RL-96-12	DOE Reading Room
100-D Island Radiological Survey	Danielson, R.A., and R. Jaquish	11/1/1996	electronic	WDOH/ERS-96-1101	Washington State Department of Health, Division of Radiation Protection
1994 Fish Tissue and Sediment Sampling Report	Davis, D., D. Serdar (Washington State Pesticide Monitoring Program)	12/1/1996	electronic	No. 96-352	WDOE
Boise Cascade Pulp and Paper Mill Wallula, Washington Class II Inspection	Golding, S. (Washington Department of Ecology)	1/1/1997	electronic	97-302	WDOE
Public Health Assessment, Reynolds Metals Company Troutdale, Multnomah County, Oregon	Agency for Toxic Substances and Disease Registry	1/14/1997	electronic	NONE	ATSDR
PCDDs/PCDFs in Columbia River Suspended Particulate Matter	Serdar, A. and J. Cubbage (WDOE)	8/1/1997	electronic	NONE	WDOE
Creation and Analysis of Freshwater Sediment Quality Values in Washington State	Cubbage, J., D. Batts, S. Breidenbach (WDOE)	9/1/1997	electronic	No. 97-323a	WDOE

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Title	Author	Document Date	Electronic/ Hardcopy	Document Number	Received From
Public Health Assessment, U.S. Army Umatilla Depot Activity, Hermiston, Umatilla County, Oregon	Agency for Toxic Substances and Disease Registry	9/30/1997	electronic	NONE	ATSDR
Yakama Nation Support for Hanford Issues Meeting with Secretary of Energy Pena, February 23, 1998	Yallup, W.	2/19/1998	electronic	CCN 40778	Received from WCH
Screening Assessment and Requirements for a Comprehensive Assessment	Pacific Northwest National Laboratory	3/1/1998	electronic	DOE/RL-96-16-Rev. 1	Received from WCH
Yakama Nation comments on the HRA-EIS-Land Use Plan	William Yallup Sr.	6/30/1998	electronic	CCN 60169	Received from WCH
Oregon's Final 1998 Water Quality Limited Streams (303)d List	Center for Environmental Education and Information	11/5/1998	electronic	NONE	Oregon DEQ
Polychlorinated Dibenzo-p-dioxin and Polychlorinated Dibenzofuran Conger Profiles in Fish, Crayfish, and Sediment Collected near a Wood Treating Facility and a Bleached Kraft Pulp Mill	Foster, E.P., D. Drake, and R. Farlow (Oregon DEQ)	1999	hardcopy	NONE	Received from WCH
DRAFT: Analysis and Selection of Fish Consumption Rates for Washington State Risk Assessments and Risk-based Standards	L. Keill and L. Kissinger	3/2/1999	electronic	NONE	DOE Reading Room
Offsite Dose Calculation Manual	Unknown	5/1/1999	electronic	NONE	DOE Reading Room
Appendix E, Columbia River Conceptual Model	GW/VZ Integration Project SAC Concepts for Architecture, Platform, and Data Management	9/30/1999	electronic	NONE	Letter report downloaded 4/17/07
Steelhead Spawning Surveys Near Locke Island, Hanford Reach of the Columbia River	R.P. Mueller and D.R. Geist	10/1/1999	electronic	PNNL-13055	Pacific Northwest National Laboratory, PNNL-13055

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Title	Author	Document Date	Electronic/ Hardcopy	Document Number	Received From
Groundwater - River Interaction in the Near River Environment at the 100-N Area	HydroGeologic	12/21/1999	electronic	NONE	Received from WCH
Screening Level Investigation of Water and Sediment Quality of Creeks in Ten Eastern Washington Mining Districts, With Emphasis on Metals	WDOE	1/1/2000	electronic	No. 00-03-004	WDOE
The Potential for Chromium to Adversely Affect Chinook Salmon (Oncorhynchus Tshawytscha) in the Hanford Reach of the Columbia River, Washington, USA.	Farag, A.M., A.J. Delonay, W.G. Brumbaugh, E.E. Little, L. Cleveland, and D.F. Woodard	10/24/2000	electronic	NONE	Received from WCH; USGS Biological Resources Division
Simultaneously Extracted Metals/Acid-Volatile Sulfide and Total Metals in Surface Sediment from the Hanford Reach of the Columbia River and the Lower Snake River	Patton, G.W., E.A. Crecelius (Battelle Memorial Institute)	1/1/2001	electronic	PNNL-13417	downloaded 4/17/07 & DOE Reading Room
Health Consultation: Airborne Sediment from Lake Roosevelt, Colville Confederated Tribes (a/k/a Columbia River Mile 597-745) Bridgeport, Douglas County, Washington	Agency for Toxic Substances and Disease Registry	3/7/2001	electronic	NONE	ATSDR
The Columbia River System Inside Story	Bonneville Power Administration, US Bureau of Reclamation, US Army Corps of Engineers	4/1/2001	electronic & hardcopy	NONE	Received from WCH
Influence of Reservoirs on Solute Transport: a Regional-Scale Approach	Kelly, V.J. (USGS)	5/1/2001	hardcopy	NONE	Hydrogeological Processes; Vol 15, Issue 7, p 1227-1249

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Title	Author	Document Date	Electronic/ Hardcopy	Document Number	Received From
Laboratory Evaluation of the Behavioral Avoidance Preference Response of Chinook Salmon (Oncorhynchus tshawytscha) to Chromium in the Hanford Reach of the Columbia River, Washington, USA.	Delonay, A.J., W.G. Brumbaugh, E.E. Little, and L. Cleveland (USGS)	6/12/2001	electronic	90884	Received from WCH
NPDES Waste Discharge Permit - Longview Fiber	WDOE	6/20/2001	electronic	NONE	WDOE
Investigation into Recurring Toxicity of the Chinet Company Columbia River Intake	Johnson, A. and Brandee Era (WDOE)	9/1/2001	electronic	01-03-030	WDOE
Oregon Slough Entrance Channel Sediment Quality Evaluation	USACE	12/1/2001	electronic	NONE	USACE
Reassessment of Toxicity of Lake Roosevelt Sediments	Era, Brandee; Dave Serdar (Washington Department of Ecology)	12/1/2001	electronic	No. 01-03-043	WDOE
Skipanon Entrance Channel and Boat Base Sediment Quality Evaluation	USACE	12/1/2001	electronic	NONE	Received from WCH
Columbia River Basin Fish Contaminant Survey Volume II Appendix A Study Design for Assessment of Chemical Contaminants in Fish Consumed By Four Native American Tribes in the Columbia River Basin	U.S. Environmental Protection Agency Region 10	1/1/2002	electronic	NONE	EPA
The Hanford Site Historic District	U.S. Department of Energy	1/1/2002	electronic	DOE/RL-97-1047	DOE Reading Room
2001 Columbia River Recreation Survey- Implications for the Hanford Site Integrated Assessment	Anderson, D.M., J.J. Scott, A.I Bunn, R.A. Fowler, E.L. Prendergast, T.B. Miley, T.O. Eschbach, and J.A. Laksch (PNL)	3/1/2002	electronic	PNNL-13840	Pacific Northwest National Laboratory, PNNL-13840

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NPDES Waste Discharge Permit - Goldendale Aluminum	WDOE	5/1/2002	electronic	NONE	WDOE
Dredged Material Management Plan and Environmental Impact Statement; McNary Reservoir and Lower Snake River Reservoirs	US Army Corps of Engineers	7/1/2002	electronic & hardcopy	NONE	Received from WCH
Results of Sampling to Verify 303(d) Metals Listings for Selected Washington State Rivers and Creeks	WDOE	8/1/2002	electronic	No. 02-03-039	WDOE
An Initial Assessment of Hanford Impact Performed with the System Assessment Capability	Bryce, R.W., C.T. Kincaid, P.W. Eslinger, and L.F. Morasch (Pacific Norhtwest National Laboratory)	9/1/2002	hardcopy	PNNL-14027	Received from WCH
A Risk-based Screening Analysis for Radionuclides Released to the Columbia River from Past Activities at the U.S. Department of Energy Nuclear Weapons Site in Hanford, Washington FINAL REPORT	Grogan, H.A., A.S. Rood, J.W. Aanenson, and E.B. Liebow	11/1/2002	electronic	RAC-3-CDC-TASK ORDER 7-2000-FINAL	Risk Assessment Corporation, Neeses, SC 29107
Bonneville Forebay & Upstream Locations, Sediment Quality Evaluation, 9/18/02 Sampling Event	US Army Corps of Engineers	12/1/2002	electronic	NONE	downloaded 4/17/07
Columbia River Main Stem Water Discharge Records	USGS	2003	electronic	NONE	USGS. http://wa.water.usgs.gov/data/realtime/adr/2003/data/14246900.2003.sw.pdf
Concentrations and Loads of Suspended Sediment and Nutrients in Surface Water of the Yakima River Basin, Washington, 1999-2000- With an Analysis of Trends of Concentrations	Ebbert, J.C., S.S. Embrey, J.A. Kelley (US Geological Survey)	2003	electronic	WRIR-03-4026	USGS

Table A-1. List of Bibliographic Sources. (20 Pages)

Title	Author	Document Date	Electronic/ Hardcopy	Document Number	Received From
Evaluation of Aquatic and Riparian Receptor Impacts at the 100-N Area: Literature and Data Review	Patton, G. W., M. A. Chamness, A. Stegen, T. M. Poston, J. L. Downs, B. L. Tiller, R. E. Peterson, M. R. Sackschewsky (PNL)	2003	electronic	PNNL-SA-39495	Received from WCH
Occurrence and Distribution of Dissolved Trace Elements in the Surface Waters of the Yakima River Basin, Washington, 1999-2000	Hughes, C.A. (US Geological Survey)	2003	electronic	WRIS- 02-4177	USGS
Survey of Radiological and Chemical Contaminants in the Near-Shore Environment at the Hanford Site 300 Area	Patton, G.W., B.L. Tiller, E.J. Antonio, T.M. Poston, and S.P. Van Verst	3/1/2003	electronic	PNNL-13692 Rev. 1	Pacific Northwest National Laboratory, PNNL-13692 Rev. 1
Sediment Sampling and Analysis Plan Appendix Guidance on the Development of Sediment Sampling and Analysis Plans Meeting the Requirements of the Sediment Management Standards (Chapter 173-204 WAC)	F.S. Lee	4/1/2003	electronic	Ecology #03-09-043	Washington State Department of Ecology #03-09-043
NPDES Waste Discharge Permit - Fort James Camas LLC	WDOE	4/3/2003	electronic	NONE	WDOE
Evaluation of the Effects of Chromium on Fall Chinook Salmon in the Hanford Reach of the Columbia River: Integration of Recent Toxicity Test Results	Dauble, D.D., G.W. Patton, T.M. Poston and R.E. Peterson (PNL)	5/1/2003	electronic	PNNL-14008	WDOE
NPDES Waste Discharge Permit - Agrium	Washington Department of Ecology	7/10/2003	electronic	NONE	WDOE
NPDES Waste Discharge Permit - Weyerhaeuser Company	WDOE	9/30/2003	electronic	NONE	WDOE
Radiological Risk Assessment Low-Level Radioactive Waste Disposal Site Richland, Washington	A.H. Thatcher	11/21/2003	electronic	NONE	Washington State Department of Health, Office of Radiation Protection

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Monitoring Tissue Concentrations of Chromium and Fish Condition in Juvenile Fall Chinook Salmon from the Hanford Reach of the Columbia River	Tiller, B.I., D.D. Dauble, G.W. Patton, and T. M. Poston (PNNL)	1/1/2004	electronic & hardcopy	PNNL-14473	Pacific Northwest National Laboratory, PNNL-14473
Skipanon Federal Channel Bioassay Sediment Quality Evaluation Report	Sherman, T. (USACE)	3/1/2004	electronic	NONE	USACE
Technical Basis for the Derivation of Authorized Limits for Units of the Hanford Reach National Monument	Napier, B.A., M.M. Hunacek, W.E. Kennedy, A.M. Kennedy, and T.A. Ikenberry	3/1/2004	electronic	PNNL-14531	Pacific Northwest National Laboratory, PNNL-14531
Tri-Party Agreement Databases, Access Mechanisms and Procedures	KK Friday, Fluor Hanford	4/1/2004	electronic	DOE/RL-93-69	DOE Reading Room
2003 External Radiation Survey Along the Columbia River Shoreline of the Hanford Site's 100 Area	Van Verst, S.P. and E.J. Antonio (WDOH and PNL)	5/1/2004	hardcopy	DOH 320-032	WDOH
Addendum Quality Assurance and Sampling Plan for the Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004	EPA Region 10	5/1/2004	electronic	NONE	downloaded 4/17/07
Strontium-90 Transport in the Near River Environment at the 100-N Area	HydroGeologic	5/10/2004	electronic	NONE	Received from WCH
NPDES Waste Discharge Permit - Weyerhaeuser Company	WDOE	5/11/2004	electronic	NONE	WDOE
14246900 Columbia River at Beaver Army Terminal, WA	USGS	6/16/2004	electronic	NONE	USGS. http://wa.water.usgs.gov/cgi/adr.cgi?14246900
User Instructions for the Systems Assessment Capability, Rev. 1, Computer Codes Volume 1: Inventory, Release, and Transport Modules	Eslinger, P.W., T.B. Miley, D.W. Engel, W.E. Nichols, L.H. Gerhardstein, D.L. Strenge, C.A. Lo Presti, and S .K. Wurstner	9/1/2004	electronic	PNNL-14852 Vol. 1	Pacific Northwest National Laboratory, PNNL-14852 Vol I

Table A-1. List of Bibliographic Sources. (20 Pages)

Title	Author	Document Date	Electronic/ Hardcopy	Document Number	Received From
DOE News Release: Longview Fibre Fined for Wastewater Discharge	Washington Department of Ecology	10/26/2004	electronic	NONE	DOE Reading Room
Methodology and Approach for Ecotoxicological Screening Value Identification and Exposure for the 100-B/C Area Ecological Risk Assessment	Sample, B., A. Tsao, C. Arenal, H. Ohlendorf (CH2MHILL)	11/3/2004	hardcopy	NONE	Received from WCH
Hydrodynamic Simulation of the Columbia River, Hanford Reach, 1940-2004	Waichler, S.R., W.A. Perkins, M.C. Richmond (Pacific Northwest National Laboratory)	1/1/2005	electronic	PNNL-15226	downloaded 4/17/07
Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	Patton, G , M. Priddy, J. Yokel, T. Stoops, and D. Delistraty (Pacific Northwest National Laboratory, Washington State Department of Health, Washington State Department of Ecology, and Oregon Department of Energy)	2/1/2005	electronic & hardcopy	PNNL-14878	Pacific Northwest National Laboratory, PNNL-14878; Received from WCH
Concentrations Of 303(d) Listed Pesticides, PCBs, and PAHs Measured With Passive Samplers Deployed In The Lower Columbia River	Art Johnson and Dale Norton (Washington State Department of Ecology)	3/1/2005	electronic	No. 05-03-006	WDOE
Sediment Quality Evaluation - 2005 Data from Oregon Slough	USACE	3/8/2005	electronic	NONE	USACE

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Withdrawal of Notice for Preparation of a Draft Supplemental Environmental Impact Statement to the July 2002 Final Dredged Material Management Plan and Environmental Impact Statement, McNary Reservoir and Lower Snake River Reservoirs, in the States of Oregon, Washington and Idaho	Department of Defense	3/11/2005	electronic & hardcopy	NONE	Received from WCH
Risk Assessment Work Plan for the 100 Area and 300 Area Component of the RCBRA	USDOE	5/1/2005	hardcopy	DOE/RL-2004-37	Received from WCH
Lower Snake River Navigation Maintenance: Lower Snake and Clearwater Rivers, Washington and Idaho; Environmental Impact Statement	US Army Corps of Engineers, USEPA	6/1/2005	electronic	NONE	Received from WCH
Sediment Cleanup Status Report	Unknown	6/1/2005	electronic	Ecology #05-09-092	Washington State Department of Ecology #05-09-092
NPDES Waste Discharge Permit - Boise White Paper LLC	WDOE	7/1/2005	electronic	NONE	WDOE
Draft Sediment Evaluation Framework for Pacific Northwest	US Army Corps of Engineers; EPA Region 10; Washington Department of Ecology; Washington Department of Natural Resources; Oregon DEQ; Idaho DEQ; National Marine Fisheries Service; US Fish and Wildlife Service.	9/30/2005	electronic	SEF_V4_W-figures.doc	downloaded 4/17/07
Groundwater Data Package for Hanford Assessments	Thome, P.D., M.P. Bergeron, M.D. Willaims, and V.L. Freedman (Pacific Northwest National Laboratory)	1/1/2006	electronic	PNNL-14753-Rev. 1	Received from WCH
NPDES Waste Discharge Permit - Evergreen Aluminum, LLC	WDOE	1/20/2006	electronic	NONE	WDOE

Table A-1. List of Bibliographic Sources. (20 Pages)

Title	Author	Document Date	Electronic/ Hardcopy	Document Number	Received From
Hanford Site Groundwater Monitoring for Fiscal Year 2005	PNL	3/1/2006	electronic	PNNL-15670	PNNL
100 Area and 300 Area Component of the RCBRA Sampling and Analysis Plan	USDOE	5/1/2006	hardcopy	DOE/RL-2005-42	received from WCH
Radioactive Effluent Release Report	PNNL	5/1/2006	electronic	NONE	PNNL
NPDES Waste Discharge Permit - Alcoa, Inc. Wenatchee Works	WDOE	5/17/2006	electronic	NONE	WDOE
Past, Present, Future Erosion at Locke Island	Bjornstad, B.N. (PNL)	6/1/2006	electronic	PNNL-15941	PNNL
Columbia River Component Data Evaluation Summary Report	WCH	7/1/2006	electronic & hardcopy	WCH-91	Received from WCH
River Data Package for Hanford Assessments	Rakowski, C.L., G.R. Guensch, and G.W. Patton (Pacific Norhtwest National Laboratory)	8/1/2006	hardcopy	PNNL-14824	Received from WCH
Hanford Site Environmental Report for Calendar Year 2005	PNL	9/1/2006	electronic	PNNL-15892	PNNL
Hanford Site Environmental Surveillance Data Report for Calendar Year 2005	PNL	9/1/2006	electronic	PNNL-15892-APP. 1	PNNL
Hanford Site Near-Facility Environmental Monitoring Data Report for Calendar Year 2005	PNL	9/1/2006	electronic	PNNL-15892-APP. 2	PNNL
Focus on Our Top Priorities at Hanford	Jane Hedges	10/1/2006	electronic	Ecology #06-05-020	Washington State Department of Ecology #06-05-020
NPDES Waste Discharge Permit - Boise White Paper LLC	WDOE	10/2/2006	electronic	NONE	WDOE
100 Area and 300 Area Component of the RCBRA Sampling and Analysis Plan	USDOE	11/1/2006	electronic & hardcopy	DOE/RL-2005-42	Received from WCH

Table A-1. List of Bibliographic Sources. (20 Pages)

Title	Author	Document Date	Electronic/ Hardcopy	Document Number	Received From
A Demonstration of the System Assessment Capability (SAC) Rev. 1 Software for the Hanford Remediation Assessment Project	PNL	11/6/2006	electronic	PNNL-16209	PNNL
Columbia River Baseline Assessment Chapter 3	Unknown	11/15/2006	electronic	NONE	Washington State Department of Ecology
Department of Ecology EIM Database	WDOE	2007	electronic	NONE	
Sampling and Analysis Instructions for the 100 Area and 300 Area Component of the RCBRA Project	WCH	1/1/2007	electronic & hardcopy	WCH-47 Rev. 1	Received from WCH
The Columbia River Protection Supplemental Technologies Quality Assurance Project Plan	PNL	1/1/2007	electronic	PNNL-16340	PNNL
100/300 Areas Aquifer Tube Sampling and Analysis Instruction for Fiscal Year 2007, Hanford Site, Washington	Fluor	2/1/2007	hardcopy	SGW-32647	Received from WCH
Past Radioactive Particle Contamination in the Columbia River at the Hanford Site, USA	Poston, T.M., R.E. Peterson and A.T. Cooper (PNL)	8/24/2007	hardcopy	NONE	J. Radiol. Prot. 27 (2007) A45-A50

Note: This information was compiled primarily from WCH-64.

APPENDIX B

COLUMBIA RIVER COMPONENT
DATA GAP ANALYSIS WORKSHOP MEETING MINUTES
AND
RESPONSE TO COMMENTS

TRUSTEE MEETING MINUTES

CCN 134395

WCH Washington Closure Hanford

Meeting Minutes

SUBJECT	**JUNE 5 - 6, 2007 DATA GAP ANALYSIS PRESENTATION TO STAKEHOLDERS & TRUSTEES**
TO	Distribution
FROM	L. C. Hulstrom
DATE	June 21, 2007

ATTENDEES	**DISTRIBUTION**
See attached attendee list	Document Control H4-11

A meeting to present the results of the Data Gap Analysis was held on June 5 and June 6, 2007, at the Department of Ecology offices in Richland, WA. The purpose of the meeting was to describe and discuss the results of the Columbia River Component Data Gap Analysis with stakeholders and trustees. The meeting convened at 8:30 a.m. with introduction and remarks by representatives from WCH and DOE, and was followed by a presentation by Guy Vaillancourt and Karl Kasper of Woodard & Curran Inc. (W&C), who conducted the Data Gap Analysis.

Tuesday, June 5, 2007

1) Columbia River Overview (Guy Vaillancourt)

Guy Vaillancourt presented an overview of the Columbia River, discussing its importance to the area and the development of industry and dams throughout the 1900s. Specifically, the presentation described the construction of the dams relative to the release of radionuclides from the Hanford site, which illustrated that the majority of contaminants released from Hanford operations occurred after the McNary Dam was completed in 1954.

Jay McConnaughey (Yakama Nation), Sandra Lilligren (Nez Perce) and Barbara Harper (CTUIR) expressed concern that the account of the river history does not reflect the presence or importance of Native American history or activity in the area. Native people have been in the area over 10,000 years, and Celilo Falls was a major social center for generations. The lack of recognition emphasizes how the Indian people are perceived to be invisible in the process. Particular issue was taken with Guy Vaillancourt's statement that "nothing was going on at the Columbia River up to the industrialization period in the 40's." Vaillancourt indicated that he did not mean to gloss over the cultural impact the tribes have had; although he used the past tense in relation to the tribes he understands that that their involvement with the river is not only historical, but active today. He was referring specifically to industrial pollution of the river in his remarks. W&C will acknowledge the long Indian history and current use in the final report.

John Price (Ecology) said that it may be important to mention in the report what's happening with fish populations (e.g. salmon and sturgeon) historically, since the sturgeon population crashed after overfishing. He suggested that the report also discuss the contributions of industry as far as Spokane and Snake Rivers.

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Vaillancourt responded that W&C did not research fish populations as part of this evaluation.

Charlene Andrade (WDFW) asked if the decay products of short lived contaminants were addressed, and said to remember to consider decay products generally. Guy Vaillancourt indicated that decay products were addressed in the analysis.

2) Superfund Process (Guy Vaillancourt)

Guy Vaillancourt presented a flowchart of the Superfund remedial process, showing the sequence of remedial investigation (RI) – risk assessment (RA) – feasibility study (FS) steps in the broader Superfund sequence. He emphasized that the point of the risk assessment is to develop specific cleanup levels and to identify areas that need to be cleaned up. The Columbia River Component (CRC) is in the early stages of the RI, while the 100/300 Areas and the Inter-Areas study are well into the RA phase.

Jay McConnaughey (Yakama Nation) asked how NRDA fits into the Superfund process, and suggested that the NRDA process be added to the Superfund flowchart. Vaillancourt indicated that Superfund is much broader and includes NRDA. Jamie Zeisloft (DOE-RL) said that the NRDA process starts when the final ROD is complete. Vaillancourt explained that he is describing the process for remediation, or the typical CERCLA response process, not NRDA.

A discussion about operable units (OUs) followed. John Sands (DOE-RL) said that groundwater operable units will be added. John Price (Ecology) said that Ecology is really not looking at operable units for closure, they want closure by geographic area. So don't separate source and groundwater. Jamie Zeisloft (DOE-RL) noted that source and groundwater OUs are typically separated for interim actions.
John Price responded that Superfund is very flexible, and that DOE has decided to do deep vadose zone characterization and that is worth mentioning. Guy Vaillancourt (W&C) reiterated that the CRC is in the initial phases of the RI.

3) Conceptual Site Model (Guy Vaillancourt)

Guy Vaillancourt presented the Conceptual Site Model for the site, as derived from a site visit and a review of the documents during the Data Gap Analysis. The majority of the Columbia River is non-depositional (gravel bottom with little fine sediment) because of high flows. Sloughs are an exception, since fine-grained sediment deposition occurs in these areas. In the study area, the Columbia has the highest flow and the lowest suspended solids load; both the Snake and the Yakima contribute much lower flow but a much higher sediment load than the Columbia River channel at the point of their confluence with the Columbia. Most sediment from the time of historical Hanford operations was deposited behind McNary Dam, which is regarded as the "catcher's mitt" of Hanford Site contamination. However, sediment with radionuclides from historical Hanford operations are present in deeper, buried sediment, which is currently overlain by clean sediment behind the dam. Thus the river is self-healing, by natural sedimentation which has capped (buried) the historical sediments. These sediments exist beneath several feet of overlying, cleaner sediment. Most biota do not go lower than 6 inches; some go deeper but are not a significant component of the food web.

One commenter noted that sedimentation rates were different during storm events, and that the historic sediment load was much higher than now. Vaillancourt responded that, while the rate of sediment deposition behind the dam is variable, the important point is the thickness of sediment above the

contaminated sediments.

John Price (Ecology) said that the McNary Dam conceptual model is missing the lateral aspect of the backwaters behind the dam and that sediment is thinner upriver. Vaillancourt said that this could be a data gap that needs to be recognized. However, the CSM, showing the majority of contamination behind McNary, is still valid.

One attendee asked if the McNary sediment is periodically flushed out. Vaillancourt indicated that some resuspension of upper sediment does occur during spring flows.

Jay McConnaughey (Yakama Nation) said he is concerned about the removal of dams along the river; sediment could be redistributed downstream. Vaillancourt acknowledged that this is a potential issue in the future. Dams are considered "green power" and will be a more important energy source in the future because of global warming.

Guy Vaillancourt then described the division of the site portion of the river for the purposes of the Data Gap Analysis, relative to the concurrent studies of the 100/300 Area and the Inter-areas. The CRC is focused primarily on the river channel, from the "Green Line" to the eastern bank, including islands, whereas the other studies cover areas west of the Green Line and the riparian zone.

Jay McConnaughey (Yakama Nation) expressed concern with the bifurcation, since the Yakima Nation did not agree with the Green Line approach in the original documents.

John Sands (DOE-RL) inquired about potential impacts from atmospheric deposition, fugitive dusts. Vaillancourt responded that we have little sampling directly related to aerial deposition, although there is a published evaluation of the releases, fate and transport from 100/300 Area & Inter-area stacks. The Central Plateau risk assessment is also looking at air deposition.

Fran DeLozier (WCH) noted that it's important to recognize that the CRC is not in a risk assessment stage. Rather, the point is to determine if there are data gaps in the CRC study area.

Donna Morgans (Oregon DOE) expressed concern about not having identified receptors and pathways before completing the data gap analysis. How could you really understand what's a data gap if you don't understand what the receptors are for the CRC? Vaillancourt emphasized that this analysis is focused on surface water and sediment sampling for data gap analysis, to see if more samples are required. It was a conservative approach to support sampling only, and not a risk assessment.

Charlene Andrade (WDFW) asked about agricultural input. That hasn't been an aspect of the study but could be discussed in the DQO process. Vaillancourt responded that this has been acknowledged in the analysis.

4) Data Gap Analysis (Karl Kasper)

Karl Kasper of W&C walked through the assumptions and methodology of selecting COPCs and conducting the data gap analysis. As a first step, he described the concentration of radionuclides in Columbia River sediments, showing estimated current concentrations reflecting decay, and illustrated the results of 1977 boring logs from behind McNary Dam that showed the increase in contaminant levels with

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depth. This was provided as support for focusing the Data Gap Analysis on the stretch of the Columbia River from the Priest Rapids Dam to McNary Dam. He then described the 9-step process used by W&C to identify data gaps.

Sandra Lilligren (Nez Perce) expressed concerns about integrating the different studies for the Hanford Site. Jill Thomson (WCH) explained that they address this by having the 100/300 area RCBRA contractors Neptune& Co (Jim Markwiese), and Environmental Assessment Services (Brett Tiller) at the meeting, along with the WCH project manager (herself). This ensures that the picture is continuous and complete between projects.

Charlene Andrade (WDFW) asked how WCH is integrating different data into the decisions and gap analyses. For example, if there's nothing in the mussels, are you deciding that there's no problem anywhere? What about false negatives? She suggested that the CRC data gap analysis should not segregate the data; if it's not a problem in the Inter-areas, then it still might be a problem in the study area. Kasper indicated that the CRC is only using the RCBRA database to help make decisions and guide the approach to potential future CRC sampling, and not for risk assessment at this point.

Jay McConnaughey (Yakama Nation) expressed concern with having an incomplete conceptual model with regard to Native Americans and that this will result in the whole process being flawed. He noted that the process is leading up to a risk assessment, yet the boundaries have already been defined as Priest Rapids to McNary, and that's going to influence or constrain the process. Native Americans will have a maximum exposure. Jill Thomson (WCH) responded that this is a data gap analysis, not a DQO document or a risk assessment. John Sands (DOE-RL) provides further explanation on why McNary Dam is the proposed lower boundary.

John Price (Ecology) said to correct the slide at the top of Page 29 of the presentation handout relative to deposition dates of sediments at the dams. He made this comment before on an earlier document.

Donna Morgans (Oregon DOE) expressed concern about the inappropriateness of cleanup values for sediment; she'd like some perspective put on these values. Jim Markwiese (Neptune & Co) explained that the ecological value for radionuclides is based on BCGs for a dose limit of 1 rad/d for aquatic organisms. Larry Gadbois (EPA) explained that for human health, sediment is assumed to be dredged up and spread on the ground. A rural resident farmer is the exposure scenario to be used, which is considered to be a maximum exposure.

John Price (Ecology) noted issues with dates on data charts from the 1977 sediment coring profiles. Kasper responded that W&C recognizes that the dates are incorrect but believes that the data still support the general concept of increased concentration with depth. W&C acknowledges that there are concerns about the way the study was presented and it doesn't help that the dates are off.

Barbara Harper (CTUIR) asked why we are screening at this point. Kasper responded that we need to identify data gaps to look at what compounds were sampled and where sampling occurred, and that screening is a way to get a focus on the large data set.

Barbara Harper (CTUIR) had concerns about mixtures and pathways, since these often do not consider Tribal exposures. Region 6 takes thresholds and divides by 10 to be conservative. She asked whether the screening is being used to remove compounds or as a focusing step. Kasper (W&C) responded that we're

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screening to address two questions – what media are to be sampled where and for what analytes.

Barbara Harper (CTUIR) had issues with labeling something as not being a data gap. She said that surface water screening is unrealistic because of the dilution issues, and that we're missing springs and seeps. By not looking at periphyton, biota – basically at organisms that are at the interface – we're ignoring the areas of greatest exposure. Kasper (W&C) clarified that we're looking at spring and seep data.

Beth Rochette (Ecology) and Larry Gadbois (EPA) both had concerns about the screening data without knowing the number of samples collected. If a contaminant is detected with just three sampling points, all of which fall below threshold, is it dropped? They felt that there were too many "off ramps" for contaminants to end up in the bin of "no additional data needed." Kasper (W&C) responded that the number of samples and the number of detections were taken into consideration.

Barbara Harper (CTUIR), Jay McConnaughey (Yakama Nation), Beth Rochette (Ecology) and others expressed concerns with where the Trustees are being brought into the process. They noted that the boundaries for the study have already been established and that they were not part of that decision. They inquired about whether any samples were collected where tribes are fishing, for example. The conceptual model is presented and the stakeholders have had no input on the development of that model. Bottom line: people feel disenfranchised by being told what is or is not a data gap because they were not part of the process to make the data gap determination. They emphasized the need to consider spatial and temporal aspects of the data. Jay McConnaughey (Yakama Nation) wants to know what the risk will be if the dams are not in the picture and all these trapped sediments are released. Kasper (W&C) responded that the process was designed simply to allow the data to be reviewed and interpreted. Larry Gadbois (EPA) reiterated that exposed sediment should not drive a risk, based on a Washington Department of Health evaluation of the sediment behind the dams.

Beth Rochette (Ecology) expressed the hope that we do not have to go backward and add compounds. The potential universe of COPCs should be included in the DQO. She indicated that the DQO should start back at the SW-846 list of compounds. Larry Gadbois (EPA) noted that, although this is a data gap analysis, you're using the first few steps of a risk assessment process and that's being used as input to the DQOs. He went on to say that there are four compounds that drive risk at the Hanford site: chromium, uranium, strontium, and tritium.

Barbara Harper (CTUIR) stated that all COPCs should be considered, regardless of benchmarks. Kasper responded that action levels will be considered in the DQO process, based on human health and ecological benchmarks.

John Sands (DOE-RL) noted that the CRC is not an operable unit, and DOE is interested in its own contribution to the river, not that of others. That's why it's okay to back out background as a step in the Data Gap Analysis process.

Donna Morgans (Oregon DOE) said that it is unclear how the screening process helps you identify the data gaps.

Barbara Harper (CTUIR) asked whether data could be sorted by grain size, and whether we would normalize for texture and organic matter and look at residuals for these confounding factors. Jim Markwiese (Neptune & Co) clarified that residuals analyses in the RCBRA were based on effect levels that

were confounded by things like particle size; the residuals are the delta in the effect level (e.g., clam survival) that is not explained by particle size.

Charlene Andrade (WDFW) suggested that compounds not be screened out based on background in the data gap analysis. She noted later that "background" includes off-site source areas (e.g. Pasco), so is not really background. Kasper (W&C) said that is correct; all are considered as non-site related or as other off-site source areas such as above Ice Harbor Dam on the Snake, or industrial areas downstream of the Hanford Site.

Beth Rochette (Ecology) said to consider compounds that were never sampled for as COPCs: for example nitroamines, tributylphosphate, and carbon tetrachloride. Because they were never sampled that does not mean there are no data gaps. Kasper (W&C) responded that this is just an attempt to put the data in perspective; it is not the risk assessment. Guy Vaillancourt (W&C) noted that it is not surprising that when we do see organics, they were located at the Port of Pasco.

One attendee noted that we should have time-series data for our sampling areas. Kasper responded that sediment depths are equivalent to time. Sediments get older with depth.

Brett Tiller (EAS) confirmed that surface water samples in the 1990s were collected 2/3 of the way down from the water surface.

Wednesday, June 6, 2007:

5) Data Map Package Review (Karl Kasper)

Karl Kasper (W&C) proceeded through each of five data packages of maps showing COPC exceedances in surface water and sediment in various parts of the river. For each of the contaminants shown, he provided the frequency of exceedances relative to the total number of samples.

Map Package 1

Beth Rochette (Ecology) requested that the data be made available with the report to verify what was analyzed, for instance, the number and source for each analyte.

One attendee inquired why some metals were higher in the 100-B/C data set. Steve Weiss (WCH) explained that these samples were extracted by a total digestion method at the PNNL Sequim lab, resulting in higher metals values. The normal laboratory sample preparation procedure is to use a partial digestion method for samples.

Barbara Harper (CTUIR) suggested that the frequency of detection be placed on the legend for each analyte. Kasper indicated that they will provide a summary of sampling for each highlighted compound on the figures.

Charlene Andrade (WDFW) suggested that other relevant features be illustrated on the maps, e.g. industry or known sources, irrigation returns and diversions, habitats, upwellings, features that would trap sediments. Kasper said that we will work with the trustees and WCH to include this information on the figures as available.

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Map Package 2

One attendee noted that Map A shows hits around the Vernita bridge; this may reflect totals unfiltered sample results, not filtered; total and filtered metals results are in the database together. Kasper responded that we will investigate the database to see if filtered and unfiltered samples results are noted.

Barbara Harper (CTUIR) suggested ordering maps so that all media (e.g. surface water) are presented together. Kasper responded that we will revisit the way data is presented; however, more than likely it will be presented in a similar manner in the report.

There was a general discussion about river mixing around the east side of the river. Jamie Zeisloft (DOE-RL) noted that the discharge pipes were made to facilitate mixing. Brett Tiller (EAS) said that old reports from the 1950s showing discharge plumes from the reactors may be useful here. Karl Kasper (W&C) noted the general conclusion is that river channel concentrations are much lower than near-shore concentrations. Kasper said that will revisit the location of the discharge pipes and include them on figures as appropriate.

Map Package 3

Karl Kasper (W&C) noted that many "exceedances" in this package reflect PQLs greater than benchmarks, not actual detected values. Map B2 exceedances are all based on PQLs, for instance.

Jay McConnaughey (Yakama Nation) asked that upwelling out in the middle of the river from the 300 area plume be considered. Kasper said that will review existing data for this effect.

Map Package 4

Jay McConnaughey (Yakama Nation) asked how many U^{236} sediment samples there were in the database. Kasper said there were two samples, located near the 300 Area.

Paul Shaffer (Oregon DOE) asked how many surface water samples were analyzed for uranium. W&C researched the issue overnight and told him the following day that there were 253 samples analyzed for uranium, and that 51 samples had detected concentrations or PQLs over benchmarks. 13 of these exceedances were in the 300 Area, but no uranium was actually detected; the "exceedances" were based on PQLs higher than the benchmark values.

Karl Kasper (W&C) noted that data behind the dam from 1977 is not corrected for half-life decay. It is the original 1977 measurements.

Map Package 5

No comments.

6) Final Discussion

Guy Vaillancourt (W&C) provided a summary of site understanding to date:

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- Sloughs: data gaps exist for potential sources in sloughs on the east side, from the Hanford "Horn" to the 300 area. There may be perhaps four areas along this portion of the river where sediment is present downriver from a site source.
- Surface water: no data gaps exist for surface water
- Islands: potential data gaps exist for islands downriver from the sloughs
- PCBs: potential data gap exists for congener analysis
- Lower pool of McNary: there may be data gaps for radiological constituents.

Jamie Zeisloft (DOE-RL) said to clarify whether islands are uncharacterized or undercharacterized. Kasper responded that some of the islands may not be fully characterized, while others may not have been sampled at all. Jill Thomson (WCH) said that we will review the data to see if it's suitable for this study.

Jamie Zeisloft (DOE-RL) asked what types of documents would be generated. He stated that this is a RI, so we would need an RI Work Plan. The Tri-party Agreement calls for an RI Work Plan and RI report. Kasper responded that DOE will have to clarify this. Zeisloft also asked if the Columbia River is an Operable Unit. Kasper responded that it will be if remediation is needed. For now it's just an area of investigation. It can also be tied to the existing source area operable unit RODs.

Barbara Harper (CTUIR) suggested that we contact the USGS for information on depositional areas. Kasper indicated that we will check and see what is available.

Charlene Andrade (WDFW) said that additional information is needed in the report to determine whether sampling was robust enough. She also suggested that we identify habitat types on the maps, using EHS, PHS maps. Kasper responded that we will work with WCH to obtain available information.

Paul Shaffer (Oregon DOE) emphasized the need to consider the spatial gap along McNary pool: i.e., longitudinal analysis. Contaminants at the upstream end of pool may not be buried as deeply as the downstream end. Kasper responded that the area directly behind the dam has been highly sampled. Data from these studies indicates that the sediments present upstream of McNary pool in Lake Wallula (that extends all the way up to the 300 Area in Richland) are of similar or lesser concentration and/or risk as that found in the deeper core samples.

Charlene Andrade (WDFW) said that there is widespread concern about the contaminant load behind Bonneville, and suggested that we address this point clearly in the report. Kasper responded that we will address this in the report.

Larry Hulstrom (WCH) clarified that this Data Gap document will be the basis for the DQO document that will follow. John Sands (DOE-RL) said that we will figure out how this will fold into a Work Plan. The Work Plan will be distributed to the Trustees for review if this is determined to be the path to be followed.

The meeting adjourned at 12:30 pm.

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Columbia River Component Data Gap Analysis Workshop June 5-6, 2007 Richland, WA	
Name	**Organization**
Barbara Harper	CTUIR
Jamie Zeisloft	DOE - RL
John Sands	DOE - RL
Brett Tiller	EAS
Beth Rochette	Ecology - WA
Damon Delistraty	Ecology - WA
John Price	Ecology - WA
Mandy Jones	Ecology - WA
Helen Rueda	EPA
Larry Gadbois	EPA
Matt Gubitosa	EPA - Region 10
Jim Markwiese	Neptune & Company
Sandra Lilligren	Neptune & Company
John Stanfill	NezPerce Tribe
Donna Morgans	Oregon - DOE
Paul Shaffer	Oregon - DOE
Ella Feist	Washington Closure Hanford
Fran DeLozier	Washington Closure Hanford
Jackie Queen	Washington Closure Hanford
Jill Thomson	Washington Closure Hanford
Steve Weiss	Washington Closure Hanford
Wayne Johnson	Washington Closure Hanford
Larry Hulstrom	Washington Closure Hanford
Charlene Andrade	WDFW
Erika Lloyd	Woodard & Curran
Guy Vaillancourt	Woodard & Curran
Janet Robinson	Woodard & Curran
Karl Kasper	Woodard & Curran
Jay McConnaughey	Yakama Nation

RESPONSE TO COMMENTS

CCN 135400

Memoranda

Date: June 21, 2007
From; Karl Kasper W&C
To: Larry Hulstrom WCH
Re: Draft Response to Comments for WDOE

Woodard & Curran appreciates the input and insights offered in the form of comments by John Price of the Washington State Department of Ecology. Woodard & Curran presents the following additional information and further delineation in responding to the comments.

Comment 1: *The Columbia River Inter-Tribal Fish Commission Report (ca. 2002) included the statement about contamination in fish "The distribution across stations was variable although fish collected from the Hanford Reach of the Columbia River and the Yakima River tended to have higher concentrations of organic chemicals than other study sites."*

Response: The text cited is found in the *Columbia River Basin Fish Contaminant Survey 1996-1998* (EPA 910-R-02-006) on page E-4. In examining this study (EPA 910-R-02-006), the following key results are highlighted:

- A total of 281 fish samples were collected from the entire Columbia River and many of its tributaries.
- Fish samples from the Hanford Reach included 3 sturgeon (three individual fish), 6 composite samples of Largescale Suckers (between 27 and 72 individual fish), and 6 composite samples of whitefish (between 54 and 210 fish)
- No anadromous fish were collected from the Hanford Reach. The resident fish species collected from Hanford Reach were White Sturgeon and Largescale Sucker.
- Key contaminants relating to human health include: PCBs, DDE, chlorinated dioxins, furans, arsenic, and mercury. None of these appear to have significant contributing sources from the Hanford site and are likely from other off-site sources (e.g., naturally occurring, agriculture, municipal waste water or industrial).

Organic compounds including PCBs, DDE, chlorinated dioxins and furans were reported to have higher concentrations in the Yakima and Columbia Rivers. While the concentrations may appear elevated according to the presentations on charts provided, there were no statistical analyses showing differences between the Yakima and Columbia Rivers and other areas. The number of samples reported in the appendices was small and the power of any comparisons may have precluded a statistical comparison.

The reported concentrations for organics in the Yakima and Columbia Rivers were similar in many instances for pesticides and their degradation products. The two highest concentrations for White Sturgeon came from two fillets from a single fish from the Hanford Reach. The fish collected varied greatly in size, suggesting large differences in

age, which make comparisons of compound concentrations difficult in the same area and especially across the entire basin.

In summary, this information will be referenced, however, because of the limited number of samples and no conclusive statement about the potential sources of contaminants or comparison within the basin or tributary drainages it is difficult to draw a conclusion as to the potential impact the Hanford Site has had on resident fish populations.

Comment 2: *The discussion of industrialization of the Columbia River, and potential contamination sources, ignored the major tributary rivers on the mid- and lower Columbia (with the exception of the Walla Walla River).*

Response: The contributions from tributaries to the Columbia will be used to explain the presence of compounds not attributable to Hanford operations (within the area of the study – Priest Rapids to McNary Dam). Additional information will be provided identifying other sources from areas on the mid- and lower Columbia River and its tributaries that are being addressed by other groups such as the Columbia River Toxics Reduction Working Group.

Comment 3: *The Spokane River is well-known as a potential source of contaminants including metals and PCBs; it should be specifically addressed, not implicitly addressed as the Columbia River above Hanford. There is even the Dawn Mining Company site near Spokane that could have contributed uranium to the Columbia River system.*

Response: The report will highlight the Spokane River as an additional potential source of PCBs and metals, including uranium, in the Columbia up river of the site. The Dawn Mining Company and the Midnite Mine are good examples of other activities in the watershed that may have contributed to the presence of compounds of interest through the years.

Comment 4: *The Snake River is a potential source of radionuclides due to the DOE Idaho facility, and it should be specifically addressed. There was even a rare metals site in Idaho previously remediated under 40 CFR 192 that might have caused sampling by the Public Health Service in the 1960s (the PHS looked at impacts of uranium mill tailings sites on rivers).*

Response: Uranium mine tailings remediation, the Department of Energy Facility in Idaho, and fertilizers used in farming applications may be additional examples of potential contributors to some of the sediments in the Snake and Columbia Rivers and will be noted in the report.

Comment 5: *A major comment was that they need to present the core data to eliminate the discrepancy between dam construction dates and inferred sediment age.*

Response: Woodard & Curran agrees and a series of new figures have been created.

Comment 6: *On a related note, they never addressed the major flood on the Columbia in 1948 that might have caused significant downstream sedimentation during the decline of the flood wave.*

Response: The flood occurred in 1948. The only dam downstream at that time was the Bonneville Dam. It may be assumed that a significant amount of sediment was transported during this event. However, the flood should have no impact on contaminant mass production. Therefore, while it may have moved contaminated sediment downriver the additional massive amounts of "clean" sediment should have simply diluted the contaminated sediment, thereby reducing the in place concentrations.

Comment 7: *Jay McConnaughey (Yakama Nation) mentioned that sample locations need to be aligned with locations of usual & accustomed use by tribal nations.*

Response: This should be considered further during the DQO Process discussions.

Comment 8: *They might note that both K-40 and Ra-226 are naturally occurring. They should specifically note that K-40 has no anthropogenic origin. If they redrew their pie charts w/o K-40, the charts would look much different.*

Response: Woodard & Curran will note in the report that K-40 and Ra-226 are naturally occurring. These will also be left out of the discussion and figures.

Comment 9: *A major comment is that they need to evaluate the spatial coverage of the cores. They seem to be ruling out downstream impacts based on very few cores. We expect a good depiction of where those cores are, relative to the sediment distribution behind the dams.*

Response: The intent is to focus resources in such a way as to maximize contaminant delineation in those areas with the greatest potential for impacts on the Columbia River Corridor. A specific map showing the locations from which core samples have been taken will be included in the report.

Comment 10: *They need to describe the longitudinal sediment profile behind the reservoirs. They showed one conceptual model figure with deep sediment. It was pointed out during the meeting that the sediment would thin in the upstream direction. They need to specifically describe the backwater effect of Lake Wallula, and how the backwater extends all the way to the barge docking facility upstream of Ecology's office.*

Response: A more complete description is being developed for inclusion in the data gap analysis report.

APPENDIX C

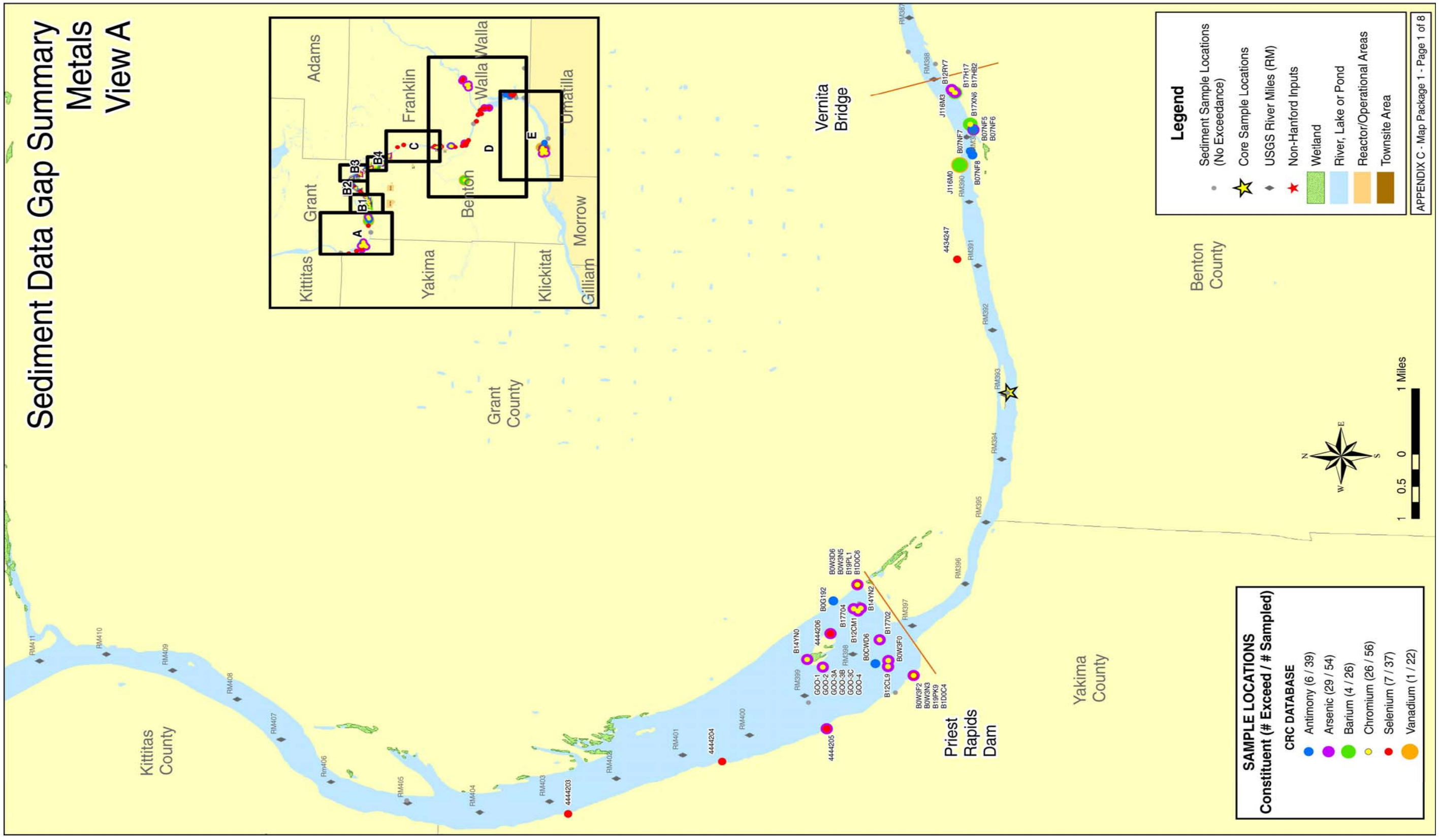
MAP PACKAGES #1 – #5

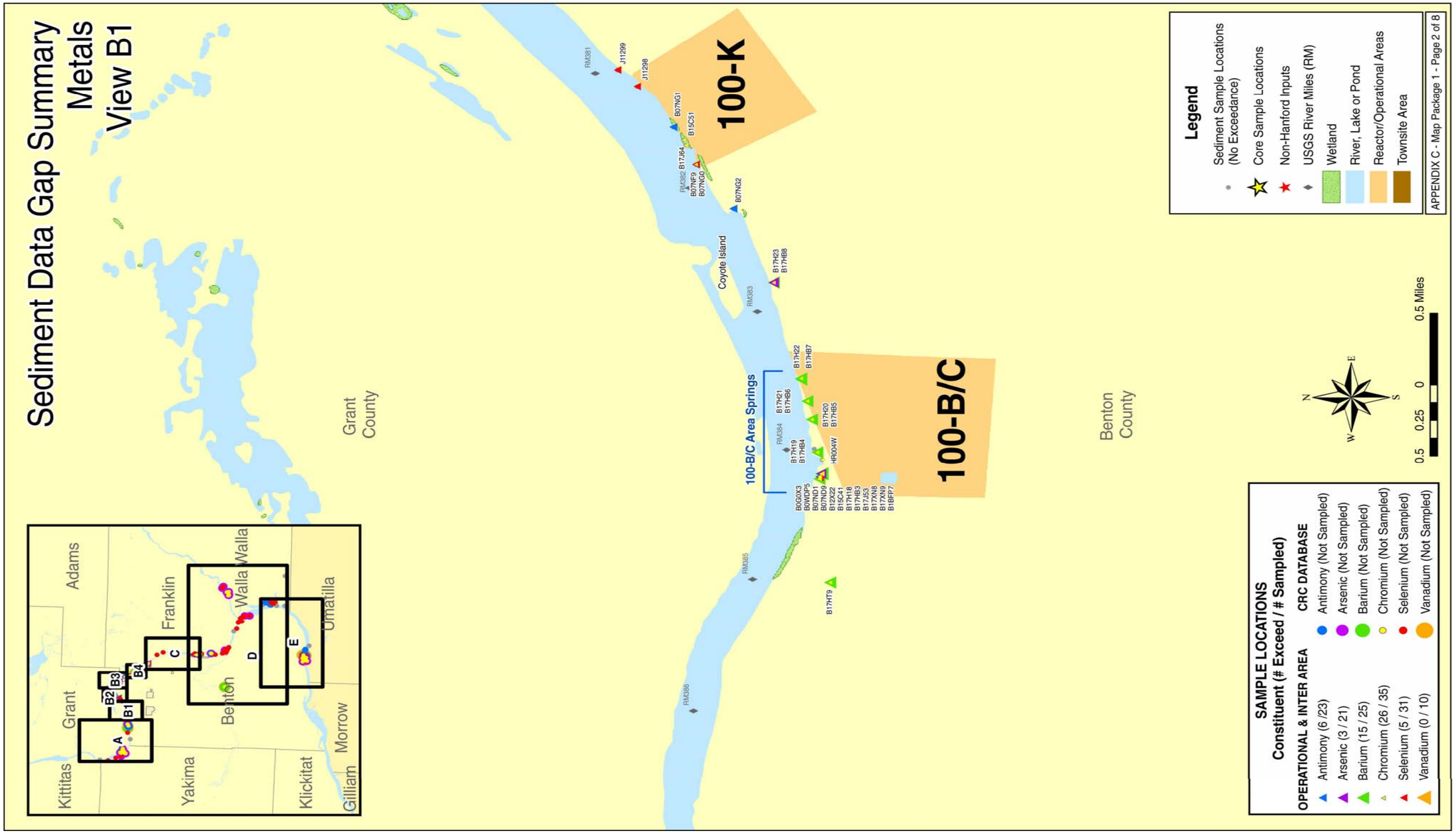
MAP PACKAGE #1

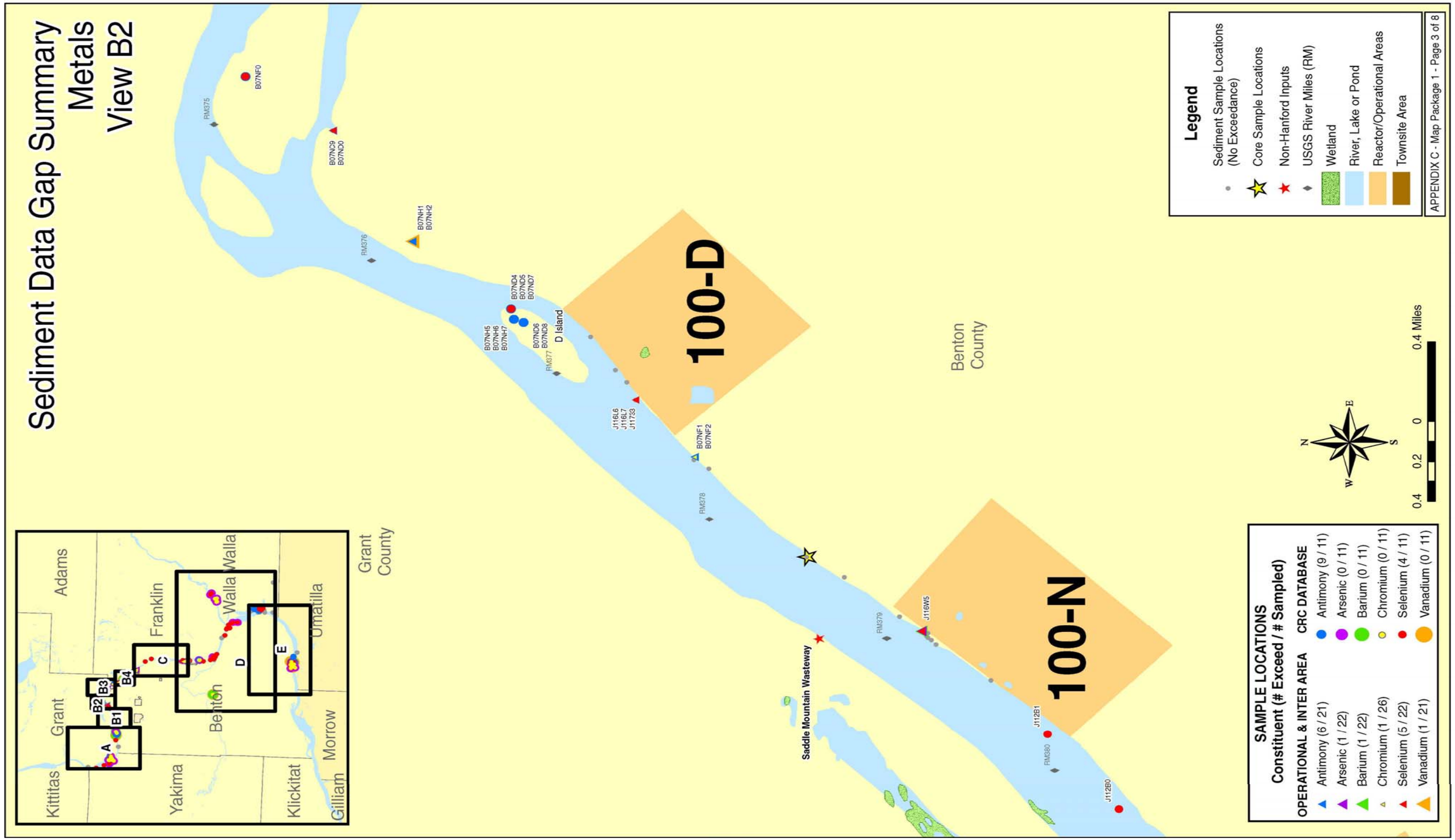
SEDIMENT DATA GAP SUMMARY

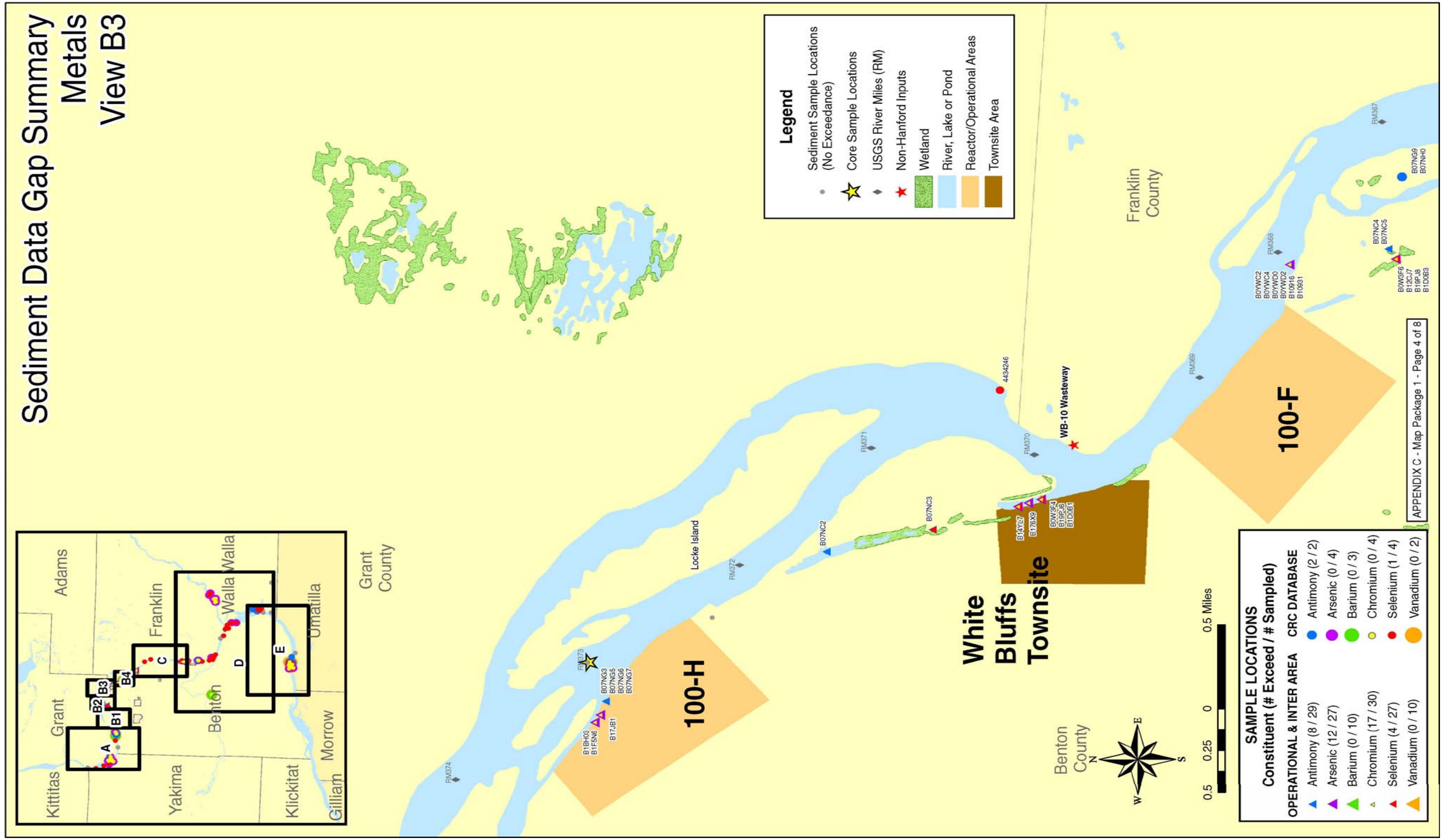
METALS

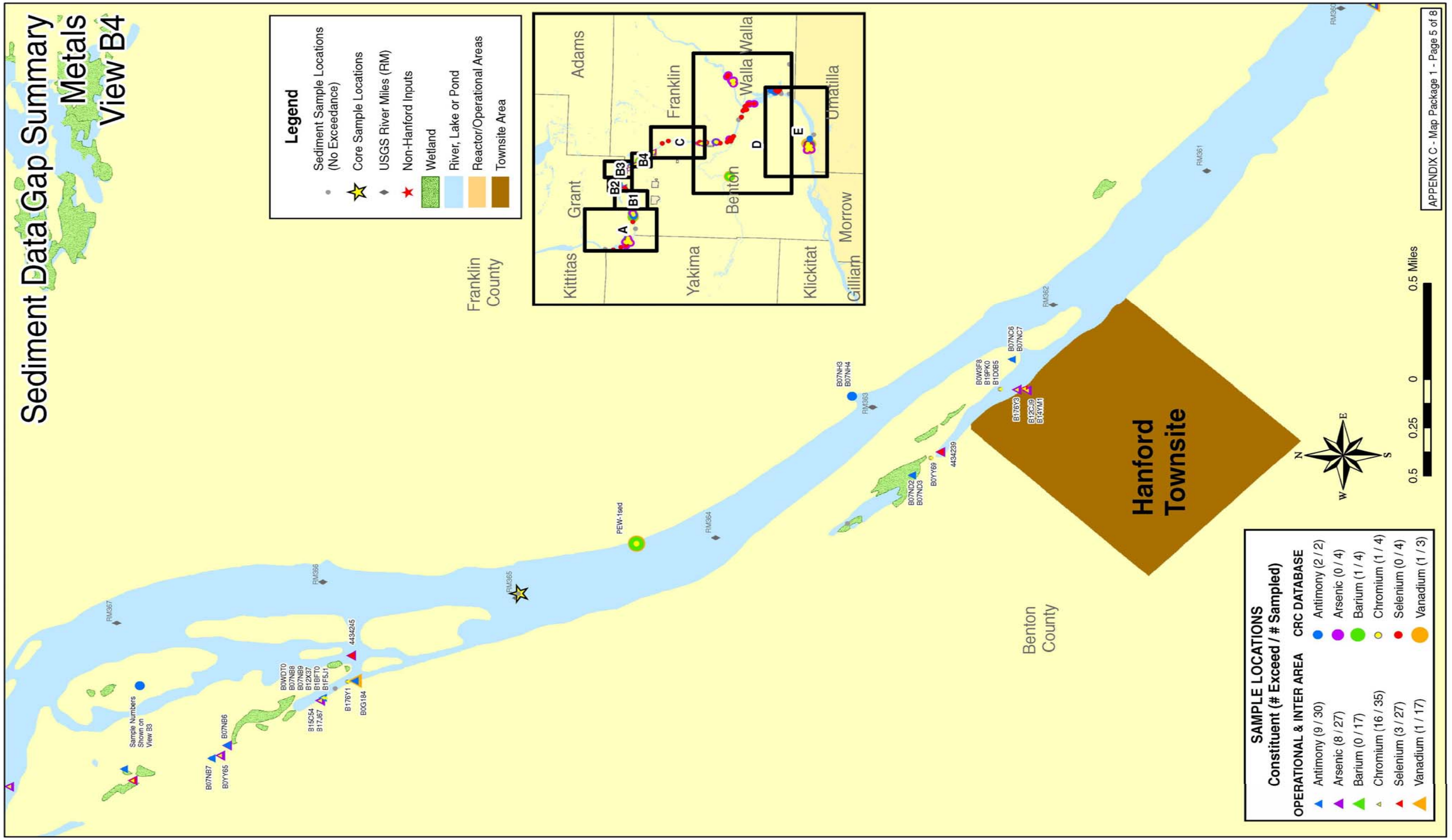
Appendix C


Sediment Data Gap Summary
Metals
View A
Adams
Grant
Franklin
Walla Walla
Benton
Umatilla
Kittitas
Yakima
Klickitat
Morrow
Gilliam
A
B1
B2
B3
B4
C
D
E
Vernita
Bridge
Benton
County
Grant
County
Kittitas
County
Yakima
County
Priest
Rapids
Dam
Legend
Sediment Sample Locations
(No Exceedance)
Core Sample Locations
USGS River Miles (RM)
Non-Hanford Inputs
Wetland
River, Lake or Pond
Reactor/Operational Areas
Townsite Area
APPENDIX C - Map Package 1 - Page 1 of 8
SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)
CRC DATABASE
Antimony (6 / 39)
Arsenic (29 / 54)
Barium (4 / 26)
Chromium (26 / 56)
Selenium (7 / 37)
Vanadium (1 / 22)
1 0.5 0 1 Miles
N
E
S
W

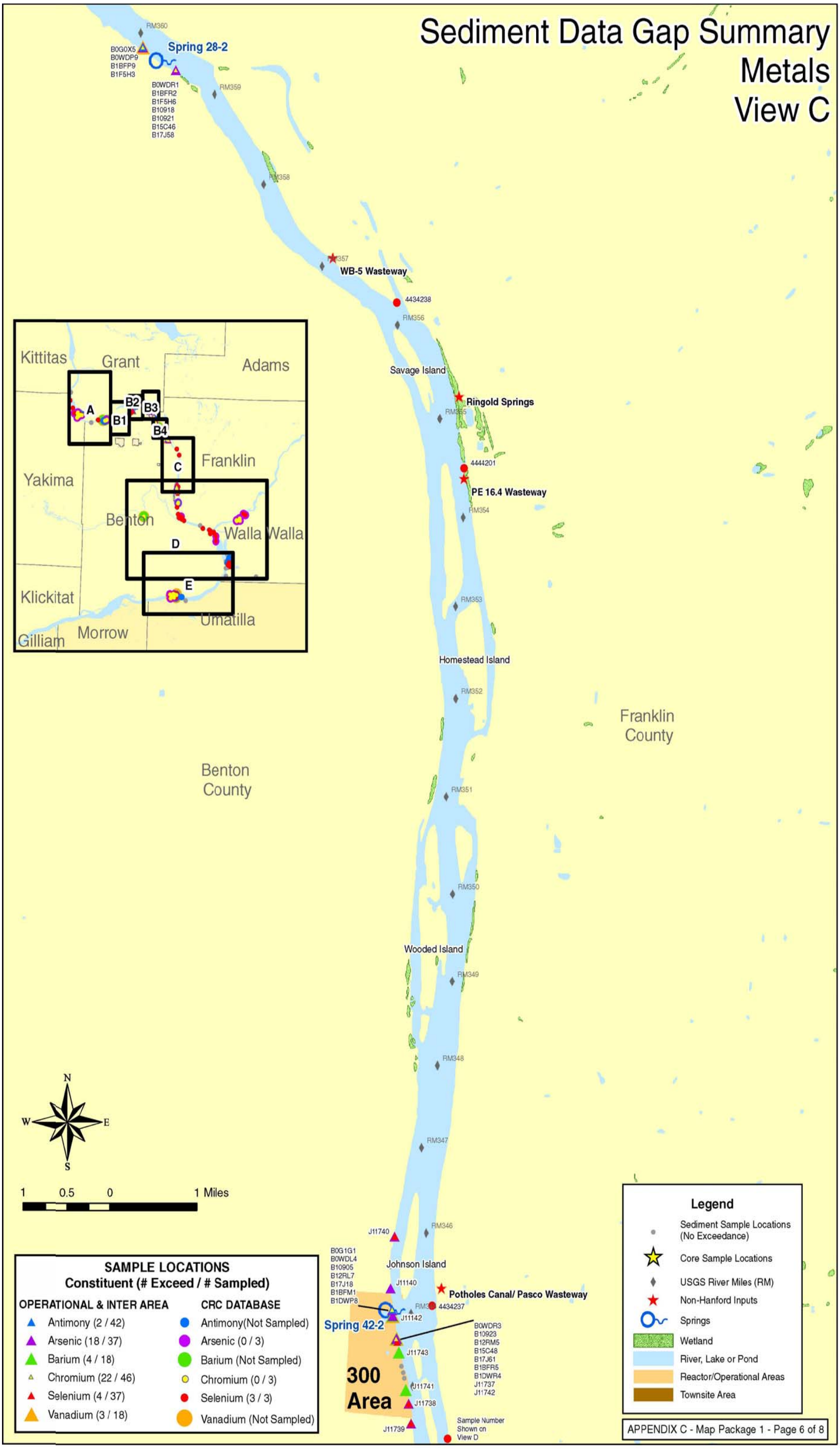

Sediment Data Gap Summary
Metals
View B1
100-K
100-B/C
100-B/C Area Springs
Coyote Island
Grant County
Benton County
RM381
RM382
RM383
RM384
RM385
RM386
J11299
J11298
B07NG1
B15C51
B17J64
B07NF9
B07NG0
B07NG2
B17H23
B17HB8
B17H22
B17HB7
B17H21
B17HB6
B17H20
B17HB5
HR004W
B17H19
B17HB4
B0G0X3
B0W0P5
B07ND1
B07ND9
B12X22
B15C41
B17H18
B17HB3
B17J53
B17XN8
B17XN9
B1BPP7
B17H79
Kittitas
Adams
Grant
Franklin
Yakima
Benton
Walla Walla
Klickitat
Umatilla
Morrow
Gilliam
A
B1
B2
B3
B4
C
D
E
Legend
Sediment Sample Locations (No Exceedance)
Core Sample Locations
Non-Hanford Inputs
USGS River Miles (RM)
Wetland
River, Lake or Pond
Reactor/Operational Areas
Townsite Area
APPENDIX C - Map Package 1 - Page 2 of 8
0.5 Miles
0.5 0.25 0
N
S
E
W
SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)
OPERATIONAL & INTER AREA
Antimony (6 /23)
Arsenic (3 / 21)
Barium (15 / 25)
Chromium (26 / 35)
Selenium (5 / 31)
Vanadium (0 / 10)
CRC DATABASE
Antimony (Not Sampled)
Arsenic (Not Sampled)
Barium (Not Sampled)
Chromium (Not Sampled)
Selenium (Not Sampled)
Vanadium (Not Sampled)

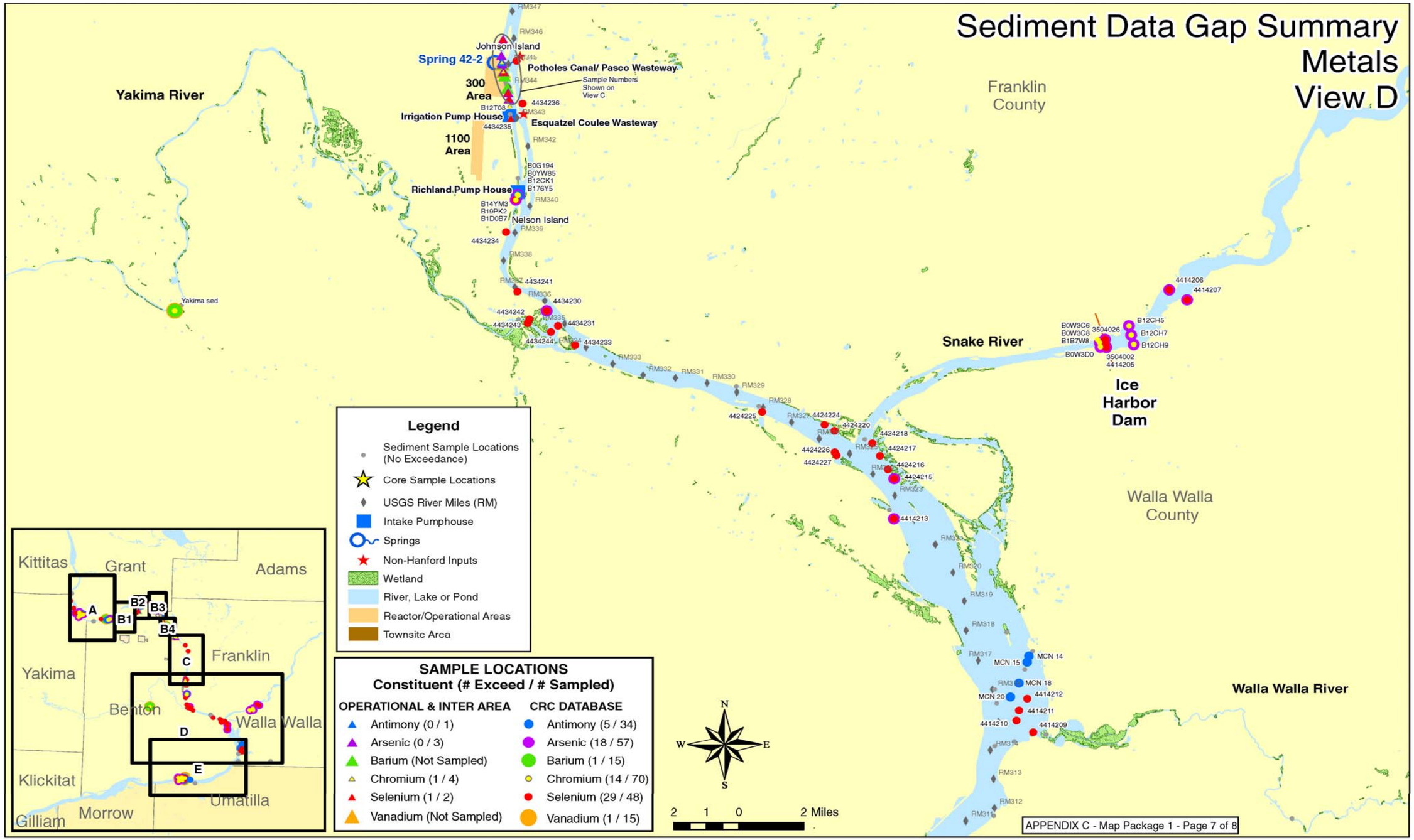

Sediment Data Gap Summary
Metals
View B2
B07NF0
RM375
B07NC9
B07ND0
B07NH1
B07NH2
RM376
B07ND4
B07ND5
B07ND7
B07NH5
B07NH6
B07NH7
B07ND6
B07ND8
D Island
RM377
100-D
J116L6
J116L7
J11733
B07NF1
B07NF2
RM378
Benton
County
Saddle Mountain Wasteway
RM379
J116W5
100-N
J12B1
RM380
J12B0
Legend
Sediment Sample Locations (No Exceedance)
Core Sample Locations
Non-Hanford Inputs
USGS River Miles (RM)
Wetland
River, Lake or Pond
Reactor/Operational Areas
Townsite Area
APPENDIX C - Map Package 1 - Page 3 of 8
0.4 Miles
0.4
0.2
0
N
S
E
W
SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)
OPERATIONAL & INTER AREA
Antimony (6 / 21)
Arsenic (1 / 22)
Barium (1 / 22)
Chromium (1 / 26)
Selenium (5 / 22)
Vanadium (1 / 21)
CRC DATABASE
Antimony (9 / 11)
Arsenic (0 / 11)
Barium (0 / 11)
Chromium (0 / 11)
Selenium (4 / 11)
Vanadium (0 / 11)
Grant
County
Adams
Franklin
Walla Walla
Umatilla
Benton
Kittitas
Yakima
Klickitat
Grant
Morrow
Gilliam
A
B1
B2
B3
B4
C
D
E

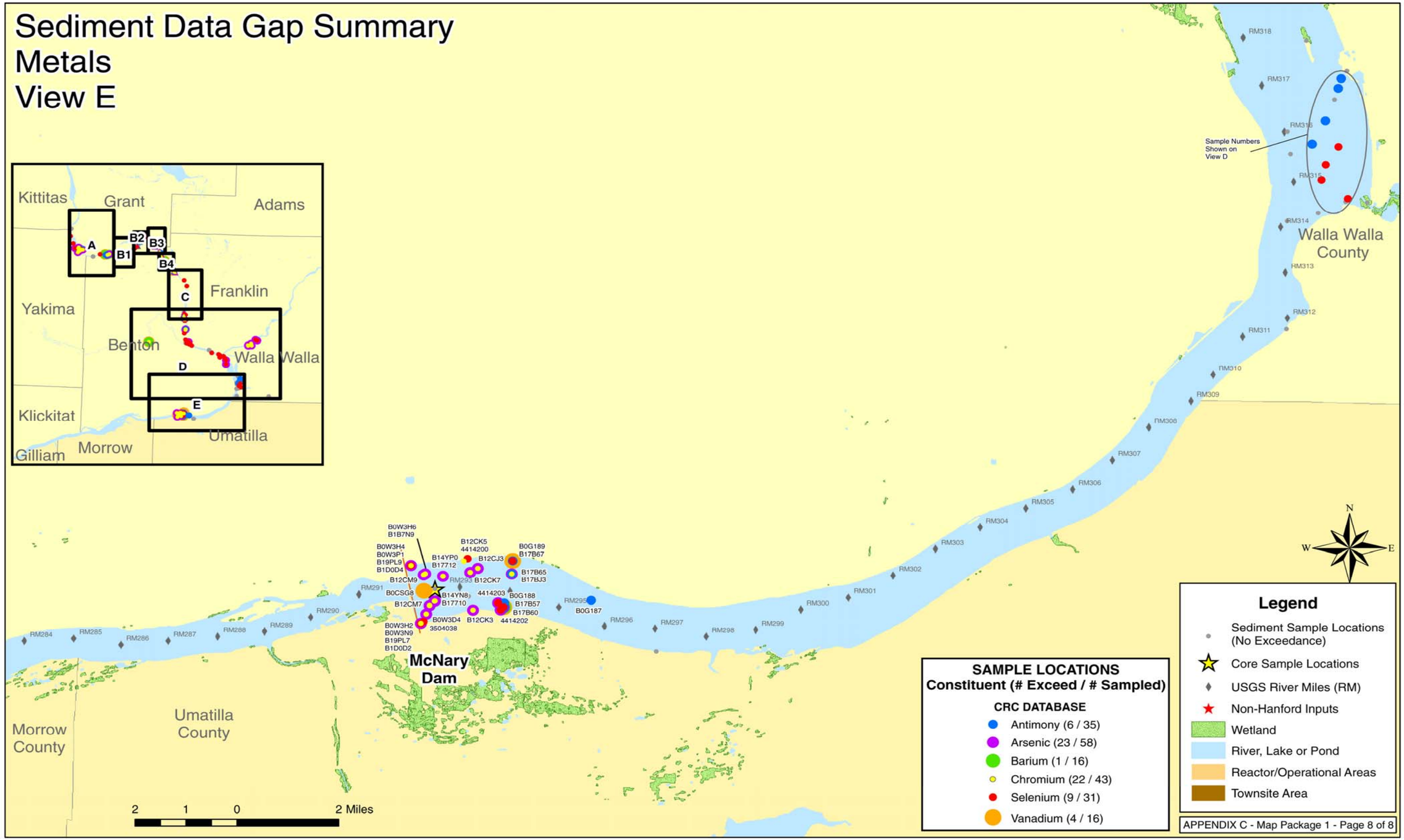

Sediment Data Gap Summary
Metals
View B3
Legend
Sediment Sample Locations (No Exceedance)
Core Sample Locations
USGS River Miles (RM)
Non-Hanford Inputs
Wetland
River, Lake or Pond
Reactor/Operational Areas
Townsite Area
Franklin County
Grant County
Benton County
Locke Island
White Bluffs Townsite
100-H
100-F
WB-10 Wasteway
RM374
RM373
RM372
RM371
RM370
RM369
RM368
RM367
B07NG3
B07NG5
B07NG6
B07NG7
B1BH03
B1F5N6
B17JB1
B07NC2
B07NC3
4434246
B1X1Y7
B176X9
B0W3F4
B19PJ8
B1D0B1
B07NC4
B07NC5
B0W3F6
B12CJ7
B19PJ8
B1TDB3
B07NG9
B07NH0
B0YWC2
B0YWC4
B0YWD0
B0YWD2
B15816
B15951
0.5 0.25 0 0.5 Miles
SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)
OPERATIONAL & INTER AREA
CRC DATABASE
Antimony (8 / 29)
Arsenic (12 / 27)
Barium (0 / 10)
Chromium (17 / 30)
Selenium (4 / 27)
Vanadium (0 / 10)
Antimony (2 / 2)
Arsenic (0 / 4)
Barium (0 / 3)
Chromium (0 / 4)
Selenium (1 / 4)
Vanadium (0 / 2)
APPENDIX C - Map Package 1 - Page 4 of 8
Kittitas
Adams
Grant
Franklin
Yakima
Benton
Walla Walla
Klickitat
Gilliam
Morrow
Umatilla
A
B1
B2
B3
B4
C
D
E


Sediment Data Gap Summary
Metals
View B4
Legend
Sediment Sample Locations (No Exceedance)
Core Sample Locations
USGS River Miles (RM)
Non-Hanford Inputs
Wetland
River, Lake or Pond
Reactor/Operational Areas
Townsite Area
Franklin County
Adams
Grant
Kittitas
Yakima
Franklin
Benton
Walla Walla
Umatilla
Morrow
Klickitat
Gilliam
A
B1
B2
B3
B4
C
D
E
RM367
RM366
RM365
RM364
RM363
RM362
RM361
PEW-1sed
4434245
4434239
B07NB7
B0Y Y65
B07NB6
B0WDT0
B07N88
B07N89
B12X37
B1BFT0
B1FSJ1
B15C54
B17J67
B176Y1
B0G184
B07NH3
B07NH4
B07ND2
B07ND3
B0Y Y69
B0W3F8
B19PK0
B1D0B5
B07NC6
B07NC7
B176X3
B12CJ9
B14YM1
Sample Numbers Shown on View B3
Hanford Townsite
Benton County
N
E
S
W
0.5 0 0.25 0.5
0.5 Miles
APPENDIX C - Map Package 1 - Page 5 of 8
SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)
OPERATIONAL & INTER AREA
CRC DATABASE
Antimony (9 / 30)
Antimony (2 / 2)
Arsenic (8 / 27)
Arsenic (0 / 4)
Barium (0 / 17)
Barium (1 / 4)
Chromium (16 / 35)
Chromium (1 / 4)
Selenium (3 / 27)
Selenium (0 / 4)
Vanadium (1 / 17)
Vanadium (1 / 3)

Sediment Data Gap Summary
Metals
View C




Sediment Data Gap Summary
Metals
View D
Yakima River
Spring 42-2
Johnson Island
Potholes Canal/ Pasco Wasteway
300 Area
Sample Numbers Shown on View C
Irrigation Pump House
Esquatzel Coulee Wasteway
1100 Area
Richland Pump House
Nelson Island
Yakima sed
Franklin County
Snake River
Ice Harbor Dam
Walla Walla County
Walla Walla River
Legend
Sediment Sample Locations (No Exceedance)
Core Sample Locations
USGS River Miles (RM)
Intake Pumphouse
Springs
Non-Hanford Inputs
Wetland
River, Lake or Pond
Reactor/Operational Areas
Townsite Area
SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)
OPERATIONAL & INTER AREA
Antimony (0 / 1)
Arsenic (0 / 3)
Barium (Not Sampled)
Chromium (1 / 4)
Selenium (1 / 2)
Vanadium (Not Sampled)
CRC DATABASE
Antimony (5 / 34)
Arsenic (18 / 57)
Barium (1 / 15)
Chromium (14 / 70)
Selenium (29 / 48)
Vanadium (1 / 15)
N
W
E
S
2 1 0 2 Miles
Kittitas
Grant
Adams
Yakima
Franklin
Benton
Walla Walla
Klickitat
Umatilla
Gilliam
Morrow
A
B1
B2
B3
B4
C
D
E
APPENDIX C - Map Package 1 - Page 7 of 8


Sediment Data Gap Summary
Metals
View E
Kittitas
Grant
Adams
Yakima
Franklin
Benton
Walla Walla
Klickitat
Umatilla
Gilliam
Morrow
A
B1
B2
B3
B4
C
D
E
Sample Numbers Shown on View D
Walla Walla County
RM318
RM317
RM316
RM315
RM314
RM313
RM312
RM311
RM310
RM309
RM308
RM307
RM306
RM305
RM304
RM303
RM302
RM301
RM300
RM299
RM298
RM297
RM296
RM295
RM293
RM291
RM290
RM289
RM288
RM287
RM286
RM285
RM284
B0W3H6
B1B7N9
B0W3H4
B0W3P1
B19PL9
B1D0D4
B12CM9
B0CSG8
B12CM7
B0W3H2
B0W3N9
B19PL7
B1D0D2
B14YP0
B17712
B14YN8
B17710
B0W3D4
3504038
B12CK5
4414200
B12CJ3
B12CK7
B12CK3
4414203
4414202
B0G189
B17B67
B17B65
B17BJ3
B0G188
B17B57
B17B60
B0G187
McNary Dam
Morrow County
Umatilla County
2 1 0 2 Miles
N
W
E
SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)
CRC DATABASE
Antimony (6 / 35)
Arsenic (23 / 58)
Barium (1 / 16)
Chromium (22 / 43)
Selenium (9 / 31)
Vanadium (4 / 16)
Legend
Sediment Sample Locations (No Exceedance)
Core Sample Locations
USGS River Miles (RM)
Non-Hanford Inputs
Wetland
River, Lake or Pond
Reactor/Operational Areas
Townsite Area
APPENDIX C - Map Package 1 - Page 8 of 8

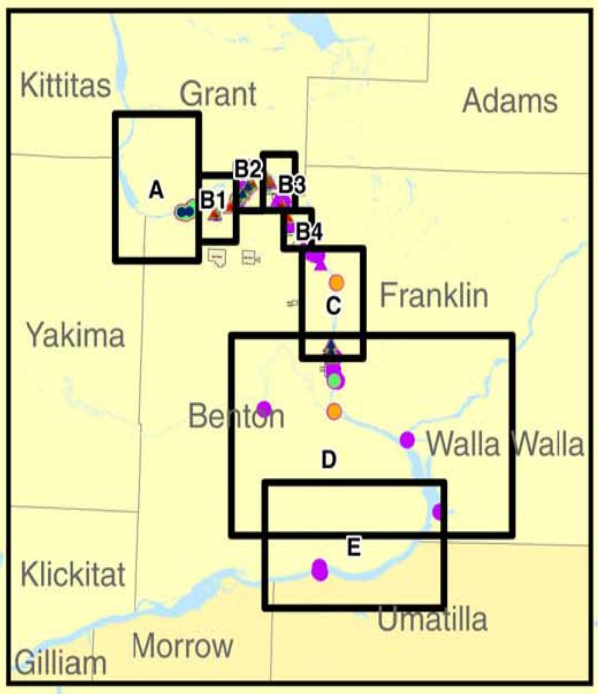
MAP PACKAGE #2

SURFACE WATER DATA GAP SUMMARY

METALS

Appendix C

Surface Water Data Gap Summary
Metals
View A



Kittitas County

Grant County

Yakima County

Benton County

RM411
RM410
RM409
RM408
RM407
Rm406
RM405
RM404
RM403
RM402
RM401
RM400
RM399
RM398
RM397
RM396
RM395
RM394
RM393
RM392
RM391
RM390
RM389

Goose Island

Priest Rapids Dam

Vernita Bridge

J11205
J11206
J111X4
J111X5
J111X6
B1B6Y2
B1B750
B1B6Y1
B1B6Y0
B1B6Y9

B0V203
B0V204
B0V205
B0V206
B0V207
B0V229
B0W972
B0YCC7
B0YCC8
B0YCD5
B124Y0
B124Y1
B124Y2
B124Y9
B12522
B12523
B12RN9
B12RP0
B12RP3
B12RP4
B12T75
B12T76
B12T77
B12T84
B12TH6
B12TH7
B12TH8
B12TH9
B13J18
B13J19
B14RT4
B14RT6
B14RV3
B14RW4
B14RW5
B14RW6
B14RW7
B171V0
B171V1
B171V2
B171V9
B171Y1
B171Y3
B171Y4
B183T7
B183V0

Legend

- Surface Water Sample Locations (No Exceedance)
- USGS River Miles (RM)
- Non-Hanford Inputs
- Wetland
- River, Lake or Pond
- Reactor/Operational Areas
- Townsite Area

N
W
E
S

1 0.5 0 1 Miles

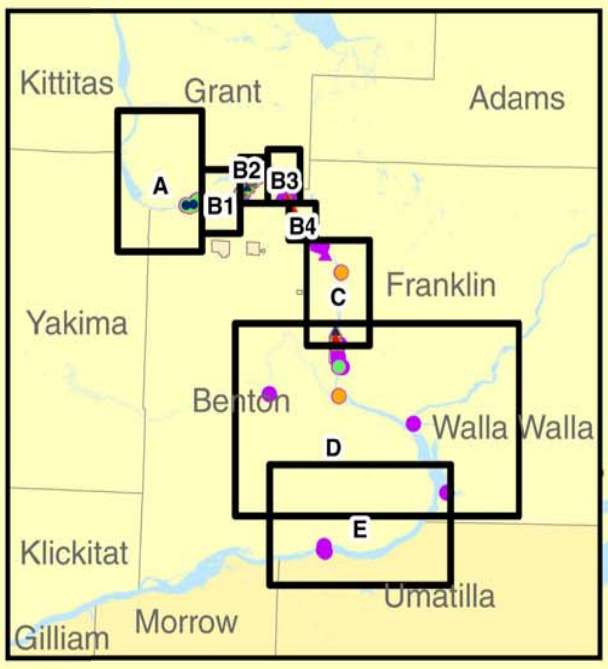
SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)

CRC DATABASE

- Aluminum (0 / 15)
- Arsenic (56 / 176)
- Barium (9 / 13)
- Boron (2 / 5)
- Chromium (0 / 176)
- Hexavalent Chromium (0 / 7)
- Iron (0 / 5)
- Manganese (0 / 19)
- Uranium (5 / 27)

APPENDIX C - Map Package 2 - Page 1 of 8

Surface Water Data Gap Summary
Metals
View B1



Grant County

RM386
RM385
RM384
RM383
RM382
RM381
Coyote Island
100-B/C Area Springs
B10F98
B11W45
B11W53
B15C62
B15C71
B15MM0
B17J76
B17J81
B180H6
B1BFT7
B1BFV3
B13609
B17J82
B17J83
B180H8
B0WP27
B0WP29
B0WP15
B0WP24
B10937
B10944
B10FB1
B12X43
B12X51
B13606
B15MM3
B180H7
100-B/C
B17J84
B17J85
HR021K
B0WP32
B0WP34
B10953
B10954
B12X60
B12X61
B15C79
B15C80
B17JR1
100-K
B15C81
B17LC4
B1F7X3
J11235
J11236

Benton County

SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)

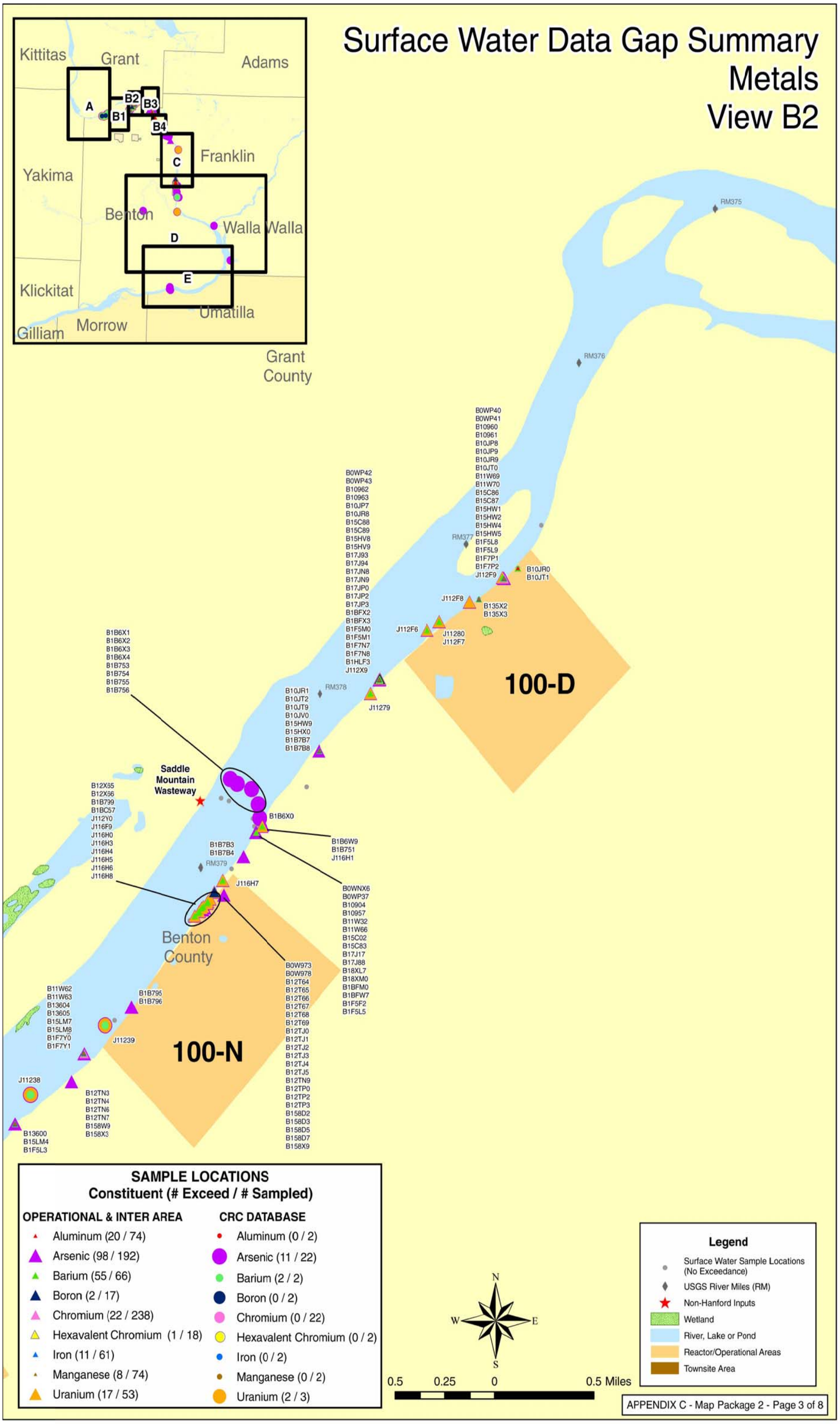
OPERATIONAL & INTER AREA	CRC DATABASE
Aluminum (5 / 11)	Aluminum (Not Sampled)
Arsenic (34 / 57)	Arsenic (Not Sampled)
Barium (13 / 32)	Barium (Not Sampled)
Boron (0 / 2)	Boron (Not sampled)
Chromium (1 / 67)	Chromium (Not Sampled)
Hexavalent Chromium (0 / 3)	Hexavalent Chromium (Not Sampled)
Iron (0 / 11)	Iron (Not Sampled)
Manganese (0 / 32)	Manganese (Not Sampled)
Uranium (2 / 24)	Uranium (Not Sampled)

N
W
E
S

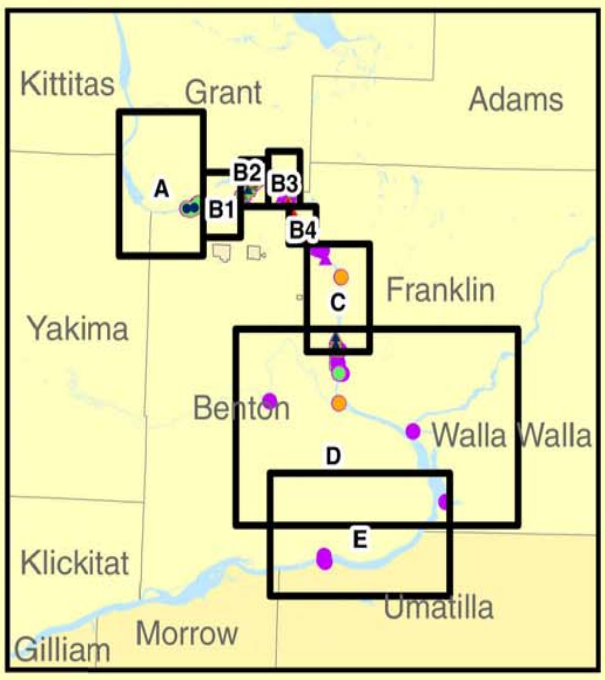
0.5 0.25 0 0.5 Miles

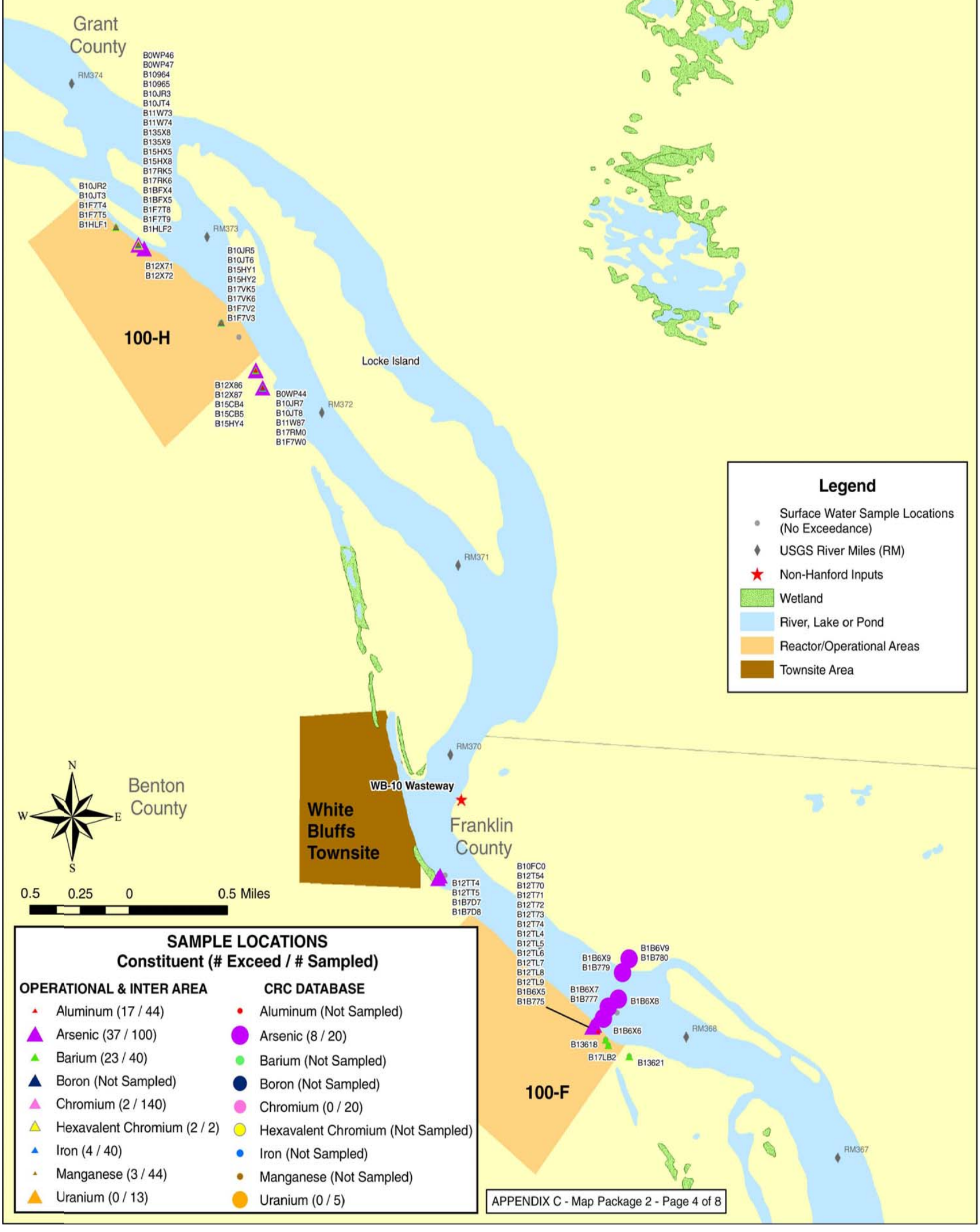
Legend
- Surface Water Sample Locations (No Exceedance)
- USGS River Miles (RM)
- Non-Hanford Inputs
- Wetland
- River, Lake or Pond
- Reactor/Operational Areas
- Townsite Area

APPENDIX C - Map Package 2 - Page 2 of 8


Surface Water Data Gap Summary
Metals
View B2
Kittitas
Grant
Adams
Yakima
Franklin
Benton
Walla Walla
Klickitat
Umatilla
Morrow
Gilliam
Grant County
A
B1
B2
B3
B4
C
D
E
RM375
RM376
RM377
RM378
RM379
100-D
100-N
Benton County
Saddle Mountain Wasteway
B0WP40
B0WP41
B10960
B10961
B10JP8
B10JP9
B10JR9
B10JT0
B11W69
B11W70
B15C86
B15C87
B15HW1
B15HW2
B15HW4
B15HW5
B1F5L8
B1F5L9
B1F7P1
B1F7P2
J112F9
B10JR0
B10JT1
J112F8
B135X2
B135X3
J112F6
J11280
J112F7
B0WP42
B0WP43
B10962
B10963
B10JP7
B10JR8
B15C88
B15C89
B15HV8
B15HV9
B17J93
B17J94
B17JN8
B17JN9
B17JP0
B17JP2
B17JP3
B1BFX2
B1BFX3
B1F5M0
B1F5M1
B1F7N7
B1F7N8
B1HLF3
J112X9
J11279
B1B6X1
B1B6X2
B1B6X3
B1B6X4
B1B753
B1B754
B1B755
B1B756
B10JR1
B10JT2
B10JT9
B10JV0
B15HW9
B15HX0
B1B7B7
B1B7B8
B12X55
B12X56
B1B799
B1BC57
J112Y0
J116F9
J116H0
J116H3
J116H4
J116H5
J116H6
J116H8
B1B6X0
B1B6W9
B1B751
J116H1
B1B7B3
B1B7B4
J116H7
B0WNX6
B0WP37
B10904
B10957
B11W32
B11W66
B15C02
B15C83
B17J17
B17J88
B18XL7
B18XM0
B1BFM0
B1BFW7
B1F5F2
B1F5L5
B0W973
B0W978
B12T64
B12T65
B12T66
B12T67
B12T68
B12T69
B12TJ0
B12TJ1
B12TJ2
B12TJ3
B12TJ4
B12TJ5
B12TN9
B12TP0
B12TP2
B12TP3
B158D2
B158D3
B158D5
B158D7
B158X9
B11W62
B11W63
B13604
B13605
B15LM7
B15LM8
B1F7Y0
B1F7Y1
B1B795
B1B796
J11239
J11238
B12TN3
B12TN4
B12TN6
B12TN7
B158W9
B158X3
B13600
B15LM4
B1F5L3
SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)
OPERATIONAL & INTER AREA
Aluminum (20 / 74)
Arsenic (98 / 192)
Barium (55 / 66)
Boron (2 / 17)
Chromium (22 / 238)
Hexavalent Chromium (1 / 18)
Iron (11 / 61)
Manganese (8 / 74)
Uranium (17 / 53)
CRC DATABASE
Aluminum (0 / 2)
Arsenic (11 / 22)
Barium (2 / 2)
Boron (0 / 2)
Chromium (0 / 22)
Hexavalent Chromium (0 / 2)
Iron (0 / 2)
Manganese (0 / 2)
Uranium (2 / 3)
N
W
E
S
0.5
0.25
0
0.5 Miles
Legend
Surface Water Sample Locations (No Exceedance)
USGS River Miles (RM)
Non-Hanford Inputs
Wetland
River, Lake or Pond
Reactor/Operational Areas
Townsite Area
APPENDIX C - Map Package 2 - Page 3 of 8

Surface Water Data Gap Summary
Metals
View B3





Legend

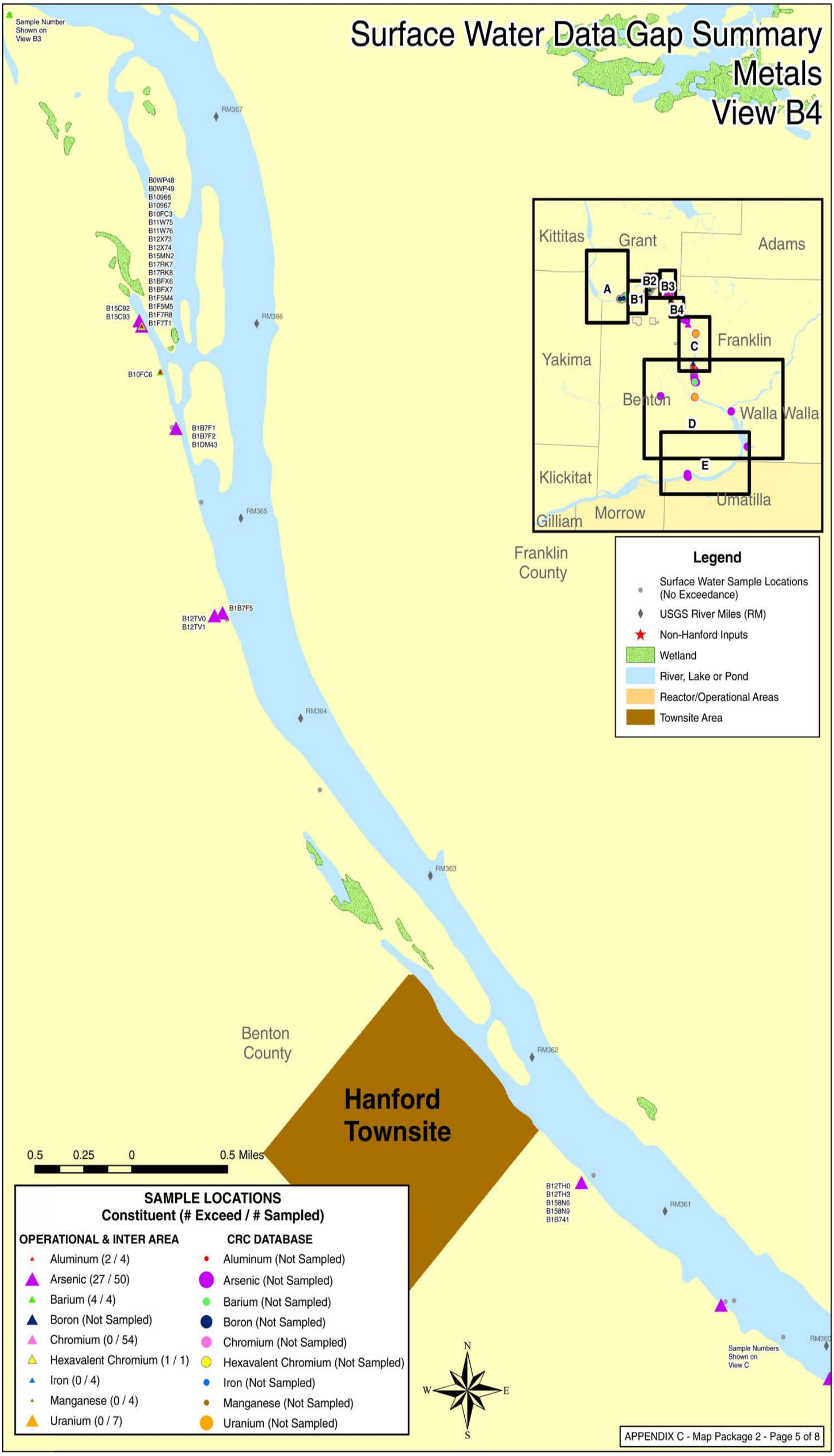
- Surface Water Sample Locations (No Exceedance)
- USGS River Miles (RM)
- Non-Hanford Inputs
- Wetland
- River, Lake or Pond
- Reactor/Operational Areas
- Townsite Area

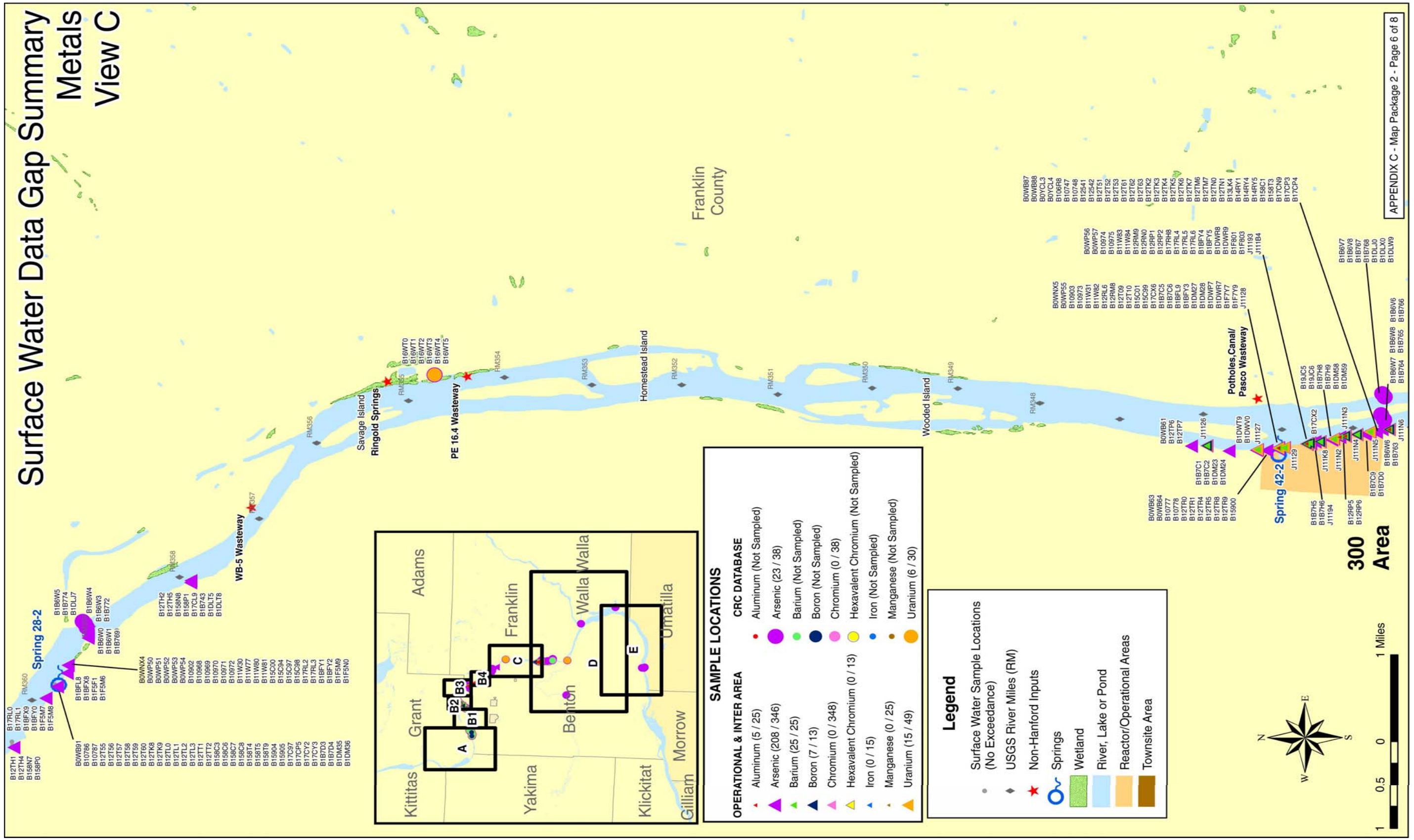
SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)

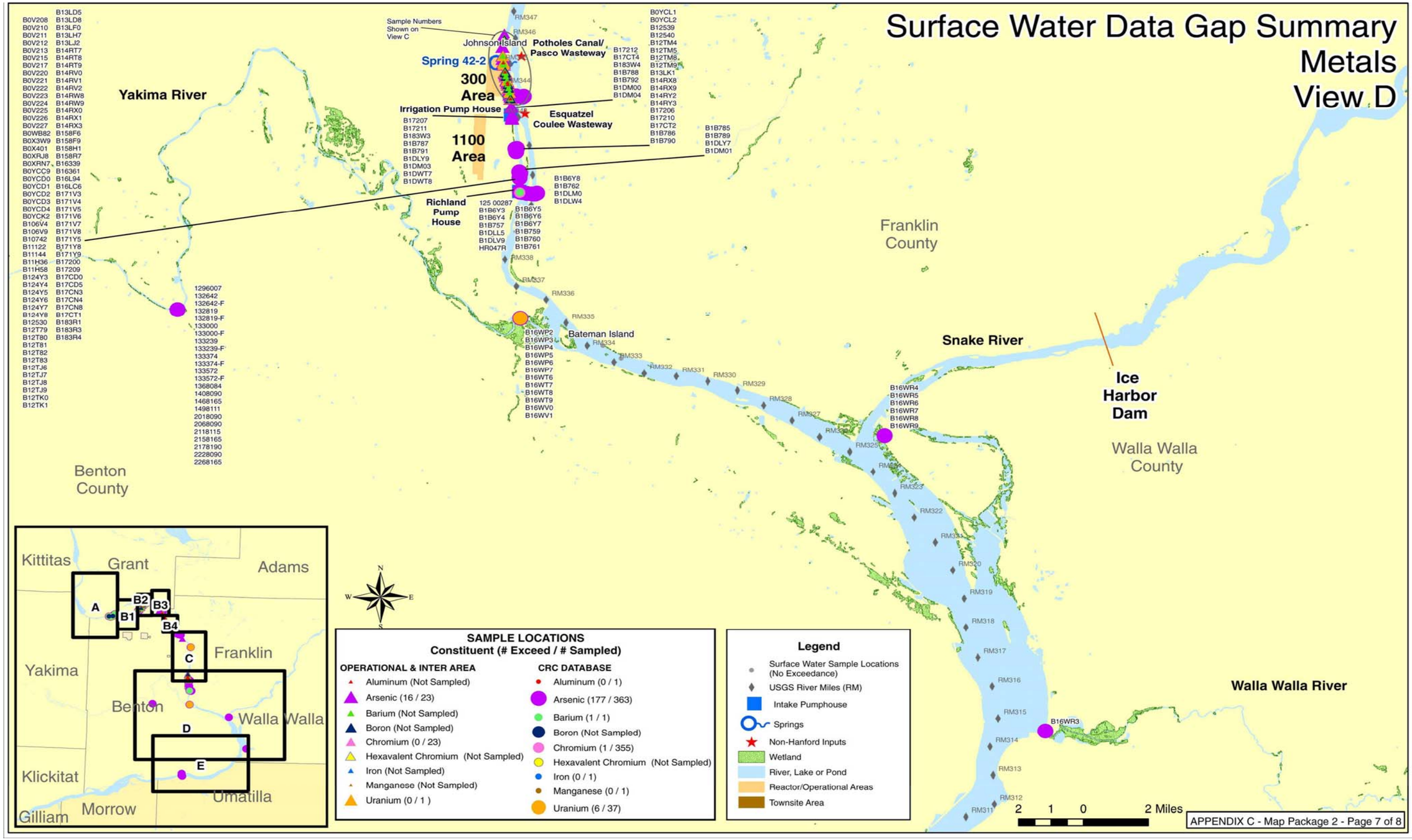
OPERATIONAL & INTER AREA	CRC DATABASE
Aluminum (17 / 44)	Aluminum (Not Sampled)
Arsenic (37 / 100)	Arsenic (8 / 20)
Barium (23 / 40)	Barium (Not Sampled)
Boron (Not Sampled)	Boron (Not Sampled)
Chromium (2 / 140)	Chromium (0 / 20)
Hexavalent Chromium (2 / 2)	Hexavalent Chromium (Not Sampled)
Iron (4 / 40)	Iron (Not Sampled)
Manganese (3 / 44)	Manganese (Not Sampled)
Uranium (0 / 13)	Uranium (0 / 5)

APPENDIX C - Map Package 2 - Page 4 of 8

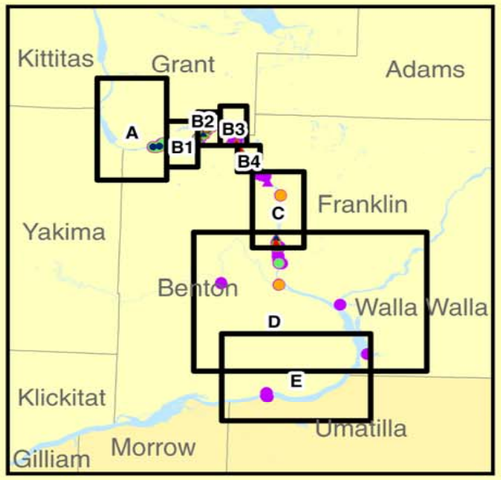
Surface Water Data Gap Summary
Metals
View B4




Surface Water Data Gap Summary
Metals
View C
APPENDIX C - Map Package 2 - Page 6 of 8
Franklin
County
Spring 28-2
WB-5 Wasteway
Savage Island
Ringold Springs
PE 16.4 Wasteway
Homestead Island
Wooded Island
Potholes Canal/
Pasco Wasteway
Spring 42-2
300
Area
SAMPLE LOCATIONS
OPERATIONAL & INTER AREA
Aluminum (5 / 25)
Arsenic (208 / 346)
Barium (25 / 25)
Boron (7 / 13)
Chromium (0 / 348)
Hexavalent Chromium (0 / 13)
Iron (0 / 15)
Manganese (0 / 25)
Uranium (15 / 49)
CRC DATABASE
Aluminum (Not Sampled)
Arsenic (23 / 38)
Barium (Not Sampled)
Boron (Not Sampled)
Chromium (0 / 38)
Hexavalent Chromium (Not Sampled)
Iron (Not Sampled)
Manganese (Not Sampled)
Uranium (6 / 30)
Legend
Surface Water Sample Locations (No Exceedance)
USGS River Miles (RM)
Non-Hanford Inputs
Springs
Wetland
River, Lake or Pond
Reactor/Operational Areas
Townsite Area
Kittitas
Grant
Adams
Yakima
Benton
Franklin
Walla Walla
Klickitat
Gilliam
Morrow
Umatilla
A
B1
B2
B3
B4
C
D
E
1 Miles
0.5
0
1
N
S
E
W


Surface Water Data Gap Summary
Metals
View D
Yakima River
Sample Numbers Shown on View C
Johnson Island
Potholes Canal/ Pasco Wasteway
Spring 42-2
300 Area
Irrigation Pump House
Esquatzel Coulee Wasteway
1100 Area
Richland Pump House
Franklin County
Bateman Island
Snake River
Ice Harbor Dam
Walla Walla County
Walla Walla River
Benton County
B0V208 B0V210 B0V211 B0V212 B0V213 B0V215 B0V217 B0V220 B0V221 B0V222 B0V223 B0V224 B0V225 B0V226 B0V227 B0WB82 B0X3W9 B0X401 B0XRJ8 B0XRN7 B0YCC9 B0YCD0 B0YCD1 B0YCD2 B0YCD3 B0YCD4 B0YCK2 B106V4 B106V9 B10742 B11122 B11144 B11H36 B11H58 B124Y3 B124Y4 B124Y5 B124Y6 B124Y7 B124Y8 B12530 B12T79 B12T80 B12T81 B12T82 B12T83 B12TJ6 B12TJ7 B12TJ8 B12TJ9 B12TK0 B12TK1
B13LD5 B13LD8 B13LF0 B13LH7 B13LJ2 B14RT7 B14RT8 B14RT9 B14RV0 B14RV1 B14RV2 B14RW8 B14RW9 B14RX0 B14RX1 B14RX3 B158F6 B158F9 B158H1 B158R7 B16339 B16361 B16L94 B16LC6 B171V3 B171V4 B171V5 B171V6 B171V7 B171V8 B171Y5 B171Y8 B171Y9 B17200 B17209 B17CD0 B17CD5 B17CN3 B17CN4 B17CN8 B17CT1 B183R1 B183R3 B183R4
B0YCL1 B0YCL2 B12539 B12540 B12TM4 B12TM5 B12TM6 B12TM9 B13LK1 B14RX8 B14RX9 B14RY2 B14RY3 B17206 B17210 B17CT2 B1B786 B1B790
B17212 B17CT4 B183W4 B1B788 B1B792 B1DM00 B1DM04
B17207 B17211 B183W3 B1B787 B1B791 B1DLY9 B1DM03 B1DWT7 B1DWT8
B1B785 B1B789 B1DLY7 B1DM01
B1B6Y8 B1B762 B1DLM0 B1DLW4
125 00287 B1B6Y3 B1B6Y4 B1B757 B1DLL5 B1DLV9 HR047R
B1B6Y5 B1B6Y6 B1B6Y7 B1B759 B1B760 B1B761
1296007 132642 132642-F 132819 132819-F 133000 133000-F 133239 133239-F 133374 133374-F 133572 133572-F 1368084 1408090 1468165 1498111 2018090 2068090 2118115 2158165 2178190 2228090 2268165
B16WP2 B16WP3 B16WP4 B16WP5 B16WP6 B16WP7 B16WT6 B16WT7 B16WT8 B16WT9 B16WV0 B16WV1
B16WR4 B16WR5 B16WR6 B16WR7 B16WR8 B16WR9
B16WR3
RM347 RM346 RM345 RM344 RM338 RM337 RM336 RM335 RM334 RM333 RM332 RM331 RM330 RM329 RM328 RM327 RM326 RM325 RM324 RM323 RM322 RM321 RM320 RM319 RM318 RM317 RM316 RM315 RM314 RM313 RM312 RM311
Kittitas Grant Adams Yakima Franklin Benton Walla Walla Klickitat Umatilla Gilliam Morrow
A B1 B2 B3 B4 C D E
N W E S
SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)
OPERATIONAL & INTER AREA
Aluminum (Not Sampled)
Arsenic (16 / 23)
Barium (Not Sampled)
Boron (Not Sampled)
Chromium (0 / 23)
Hexavalent Chromium (Not Sampled)
Iron (Not Sampled)
Manganese (Not Sampled)
Uranium (0 / 1)
CRC DATABASE
Aluminum (0 / 1)
Arsenic (177 / 363)
Barium (1 / 1)
Boron (Not Sampled)
Chromium (1 / 355)
Hexavalent Chromium (Not Sampled)
Iron (0 / 1)
Manganese (0 / 1)
Uranium (6 / 37)
Legend
Surface Water Sample Locations (No Exceedance)
USGS River Miles (RM)
Intake Pumphouse
Springs
Non-Hanford Inputs
Wetland
River, Lake or Pond
Reactor/Operational Areas
Townsite Area
2 1 0 2 Miles
APPENDIX C - Map Package 2 - Page 7 of 8

Surface Water Data Gap Summary
Metals
View E



Legend

- Surface Water Sample Locations (No Exceedance)
- USGS River Miles (RM)
- Non-Hanford Inputs
- Wetland
- River, Lake or Pond
- Reactor/Operational Areas
- Townsite Area

SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)

CRC DATABASE

- Aluminum (Not Sampled)
- Arsenic (6 / 6)
- Barium (Not Sampled)
- Boron (Not Sampled)
- Chromium (0 / 6)
- Hexavalent Chromium (Not Sampled)
- Iron (Not Sampled)
- Manganese (Not Sampled)
- Uranium (0 / 6)

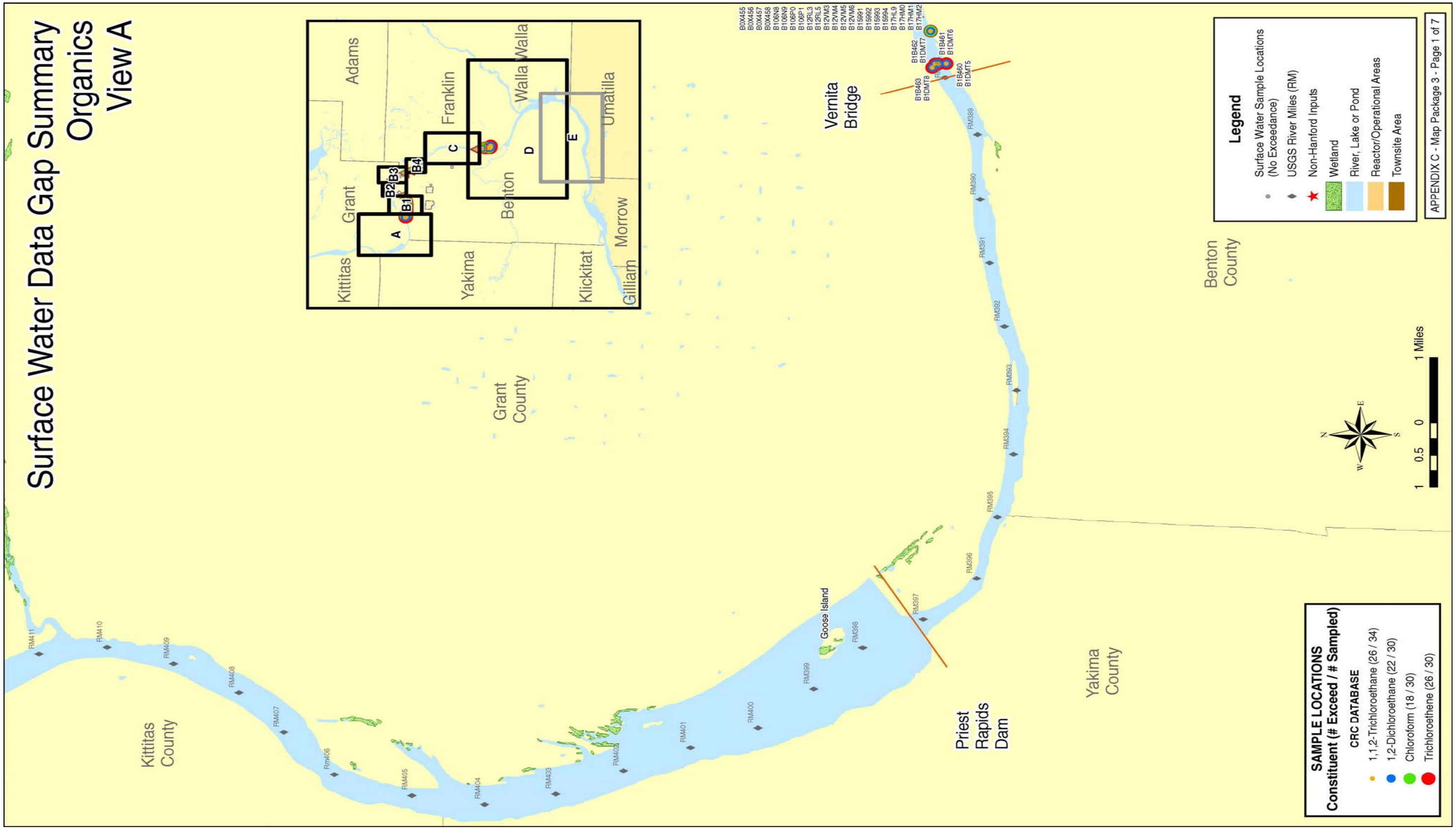
APPENDIX C - Map Package 2 - Page 8 of 8

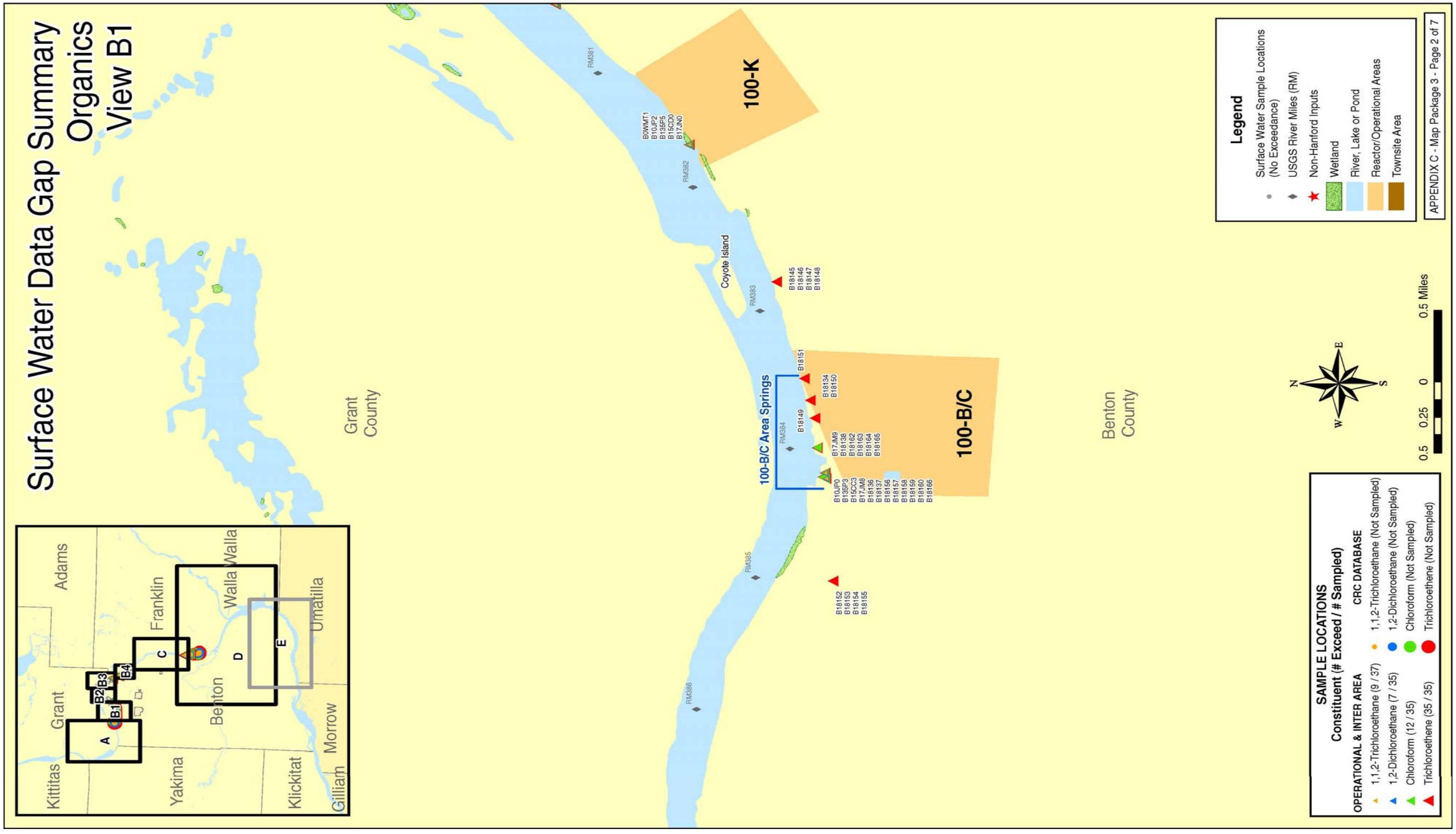
MAP PACKAGE #3

SURFACE WATER DATA GAP SUMMARY

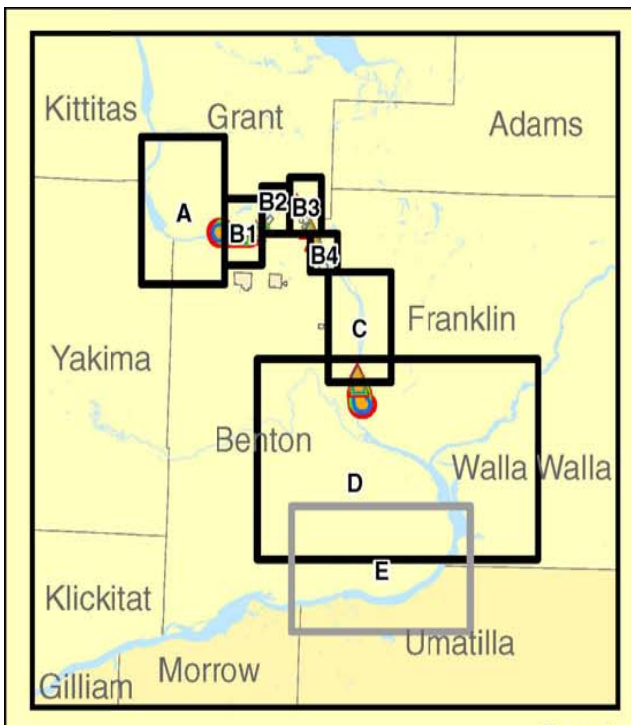
ORGANICS

Appendix C


Surface Water Data Gap Summary
Organics
View A
Adams
Franklin
Walla Walla
Umatilla
Grant
Benton
Morrow
Kittitas
Yakima
Klickitat
Gilliam
A
B1
B2
B3
B4
C
D
E
Vernita
Bridge
Benton
County
Grant
County
Kittitas
County
Yakima
County
Priest
Rapids
Dam
Goose Island
RM411
RM410
RM409
RM408
RM407
Rm406
RM405
RM404
RM403
RM402
RM401
RM400
RM399
RM398
RM397
RM396
RM395
RM394
RM393
RM392
RM391
RM390
RM389
B0X455
B0X456
B0X457
B0X458
B106N8
B106N9
B106P0
B106P1
B12RL3
B12RL5
B12YM3
B12YM4
B12YM5
B12YM6
B15991
B15992
B15993
B15994
B17HL9
B17HM0
B17HM1
B17HM2
B1B462
B1DMT7
B1B461
B1DMT6
B1B460
B1DMT5
B1B463
B1DMT8
Legend
Surface Water Sample Locations (No Exceedance)
USGS River Miles (RM)
Non-Hanford Inputs
Wetland
River, Lake or Pond
Reactor/Operational Areas
Townsite Area
APPENDIX C - Map Package 3 - Page 1 of 7
1 Miles
1
0.5
0
N
E
S
W
SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)
CRC DATABASE
1,1,2-Trichloroethane (26 / 34)
1,2-Dichloroethane (22 / 30)
Chloroform (18 / 30)
Trichloroethene (26 / 30)


Surface Water Data Gap Summary
Organics
View B1
100-K
100-B/C
100-B/C Area Springs
Coyote Island
Grant County
Benton County
RM381
RM382
RM383
RM384
RM385
RM386
B0WMT1
B10JP2
B138F5
B15DD0
B17JN0
B18145
B18146
B18147
B18148
B18151
B18134
B18150
B18149
B17JM9
B18138
B18162
B18163
B18164
B18165
B10JP0
B135P3
B15DC3
B17JM8
B18136
B18137
B18156
B18157
B18158
B18159
B18160
B18166
B18152
B18153
B18154
B18155
Legend
Surface Water Sample Locations (No Exceedance)
USGS River Miles (RM)
Non-Hanford Inputs
Wetland
River, Lake or Pond
Reactor/Operational Areas
Townsite Area
APPENDIX C - Map Package 3 - Page 2 of 7
0.5 Miles
0.5 0.25 0
N
S
E
W
SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)
OPERATIONAL & INTER AREA
1,1,2-Trichloroethane (9 / 37)
1,2-Dichloroethane (7 / 35)
Chloroform (12 / 35)
Trichloroethene (35 / 35)
CRC DATABASE
1,1,2-Trichloroethane (Not Sampled)
1,2-Dichloroethane (Not Sampled)
Chloroform (Not Sampled)
Trichloroethene (Not Sampled)
Kittitas
Grant
Adams
Franklin
Yakima
Benton
Walla Walla
Klickitat
Gilliam
Morrow
Umatilla
A
B
C
D
E
B1
B2
B3
B4

Surface Water Data Gap Summary
Organics
View B2



RM375
RM376
RM377
D Island
RM378
100-D
Saddle Mountain Wasteway
RM379
Benton
County
RM380
100-N
B10JP3
B135P6
B15CD1
B17JN1
B1F670

SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)

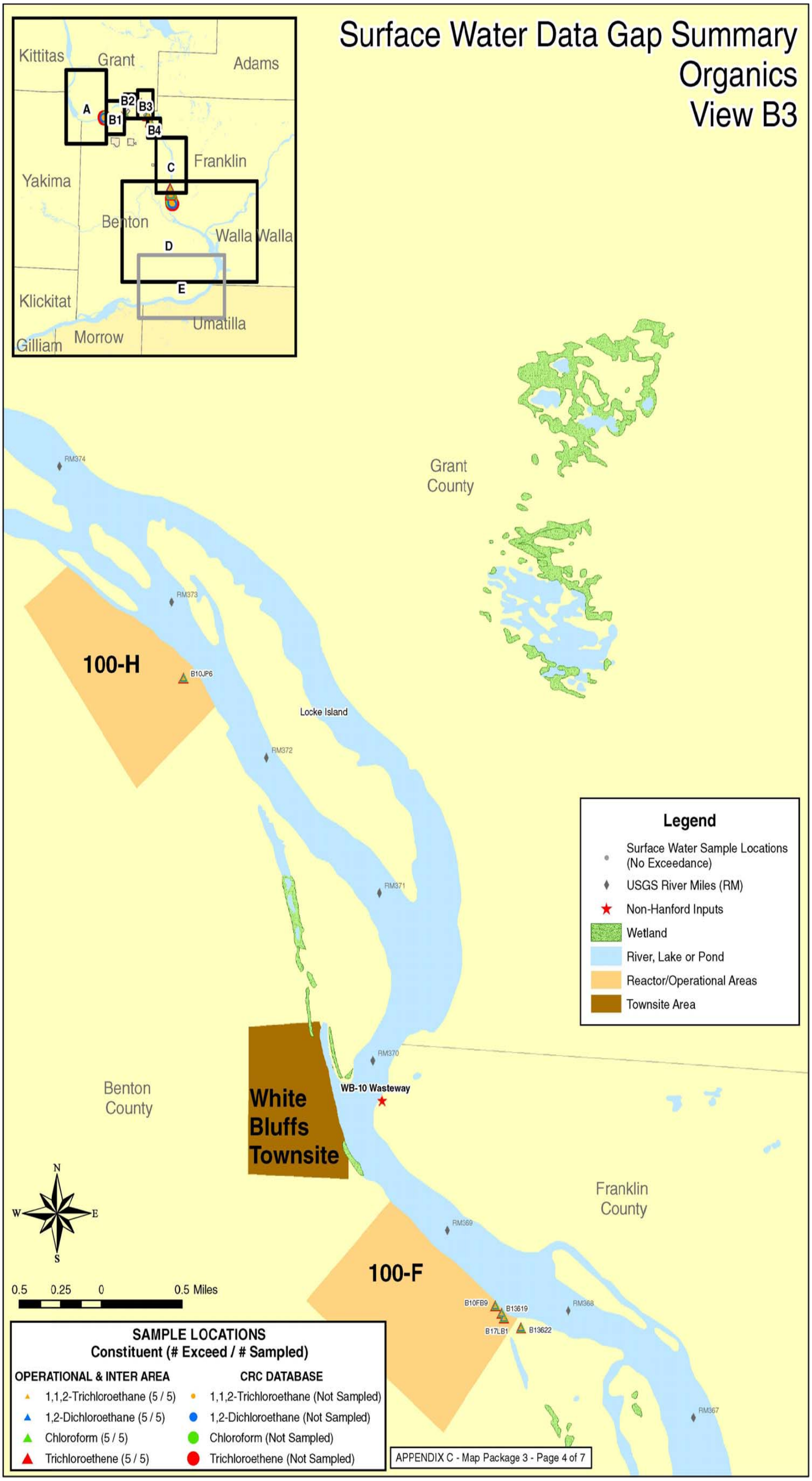
OPERATIONAL & INTER AREA	CRC DATABASE
1,1,2-Trichloroethane (4/ 6)	1,1,2-Trichloroethane (Not Sampled)
1,2-Dichloroethane (3 / 5)	1,2-Dichloroethane (Not Sampled)
Chloroform (3 / 5)	Chloroform (Not Sampled)
Trichloroethene (5 / 5)	Trichloroethene (Not Sampled)

N
W
E
S

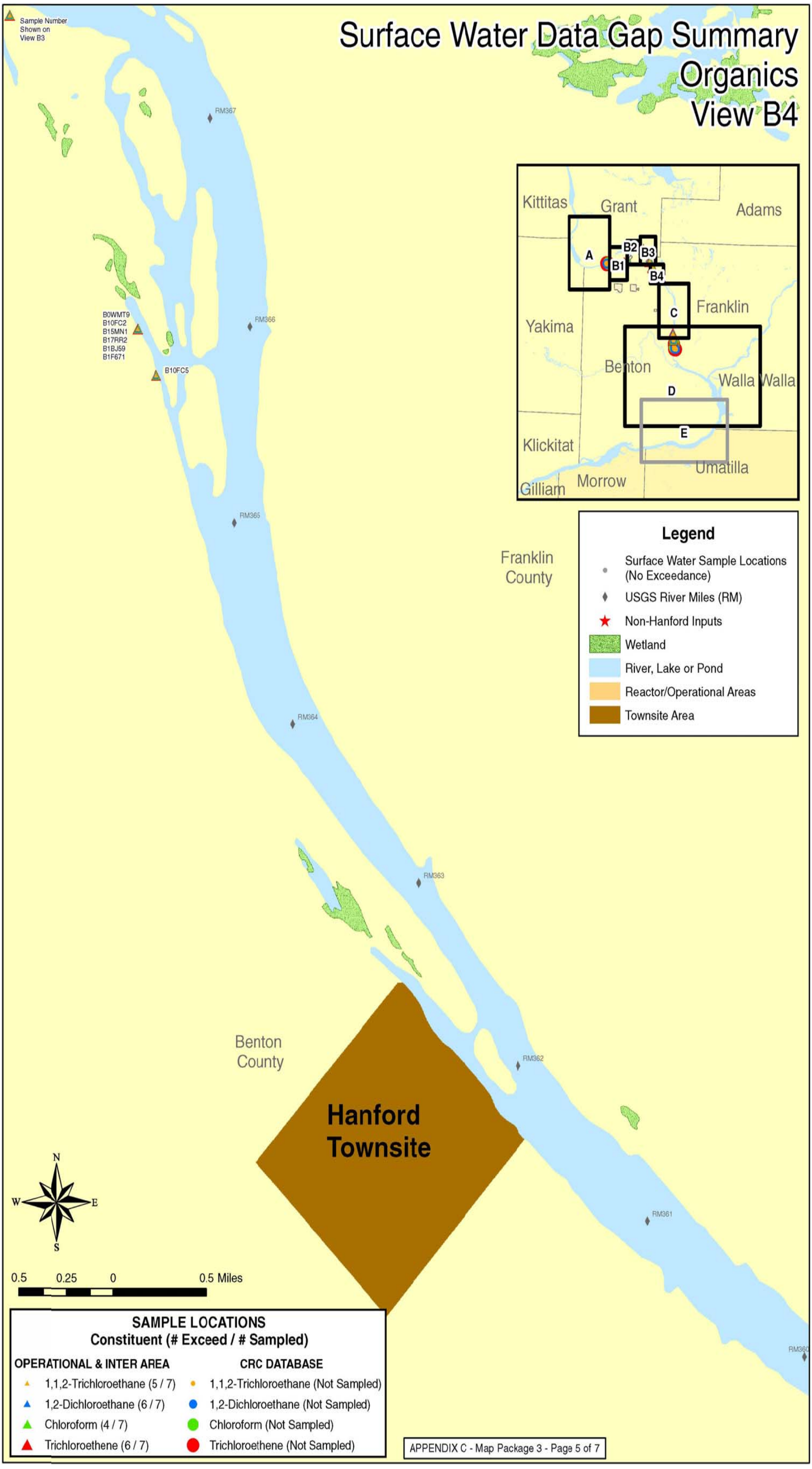
0.5 0.25 0 0.5 Miles

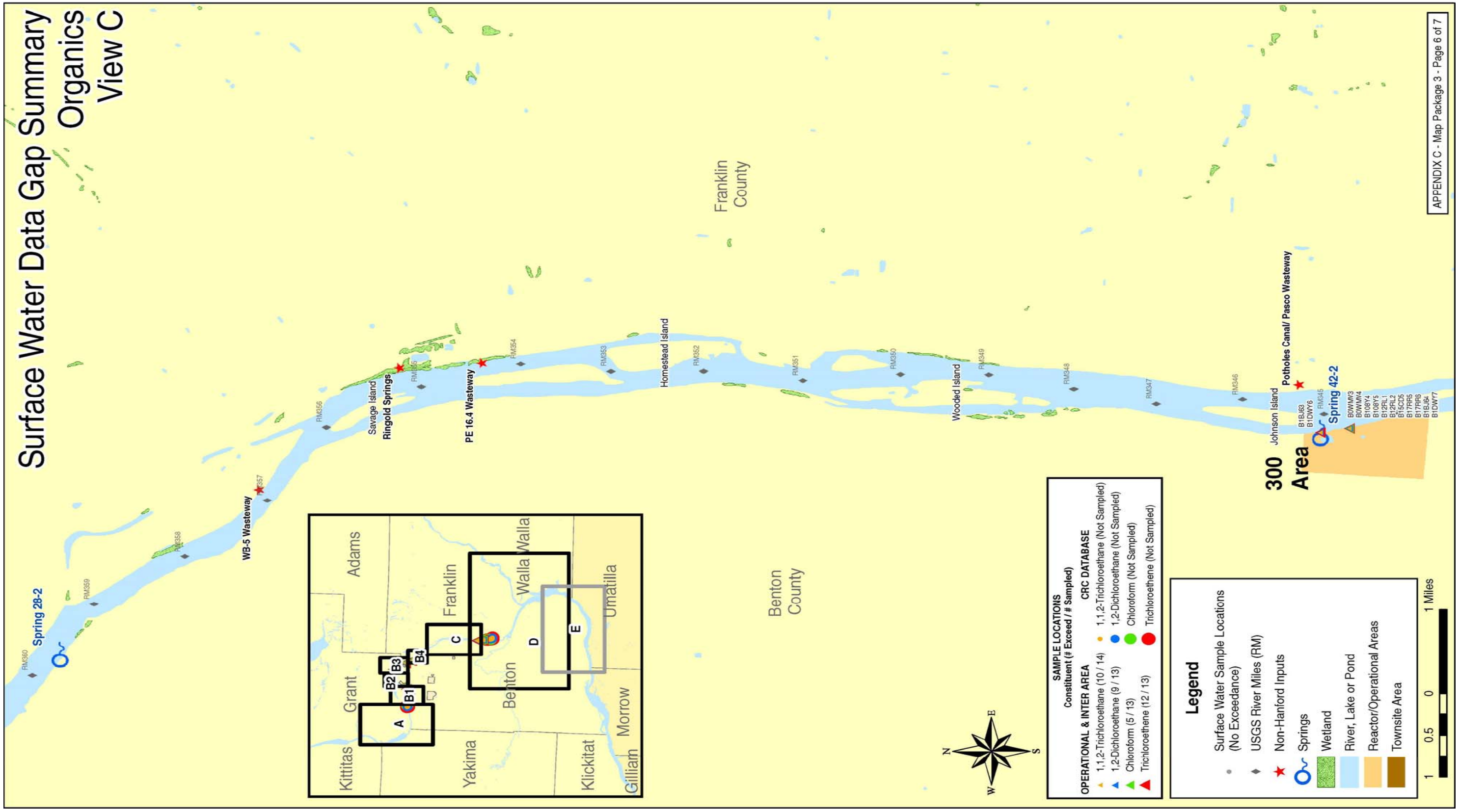
Legend
- Surface Water Sample Locations (No Exceedance)
- USGS River Miles (RM)
- Non-Hanford Inputs
- Wetland
- River, Lake or Pond
- Reactor/Operational Areas
- Townsite Area

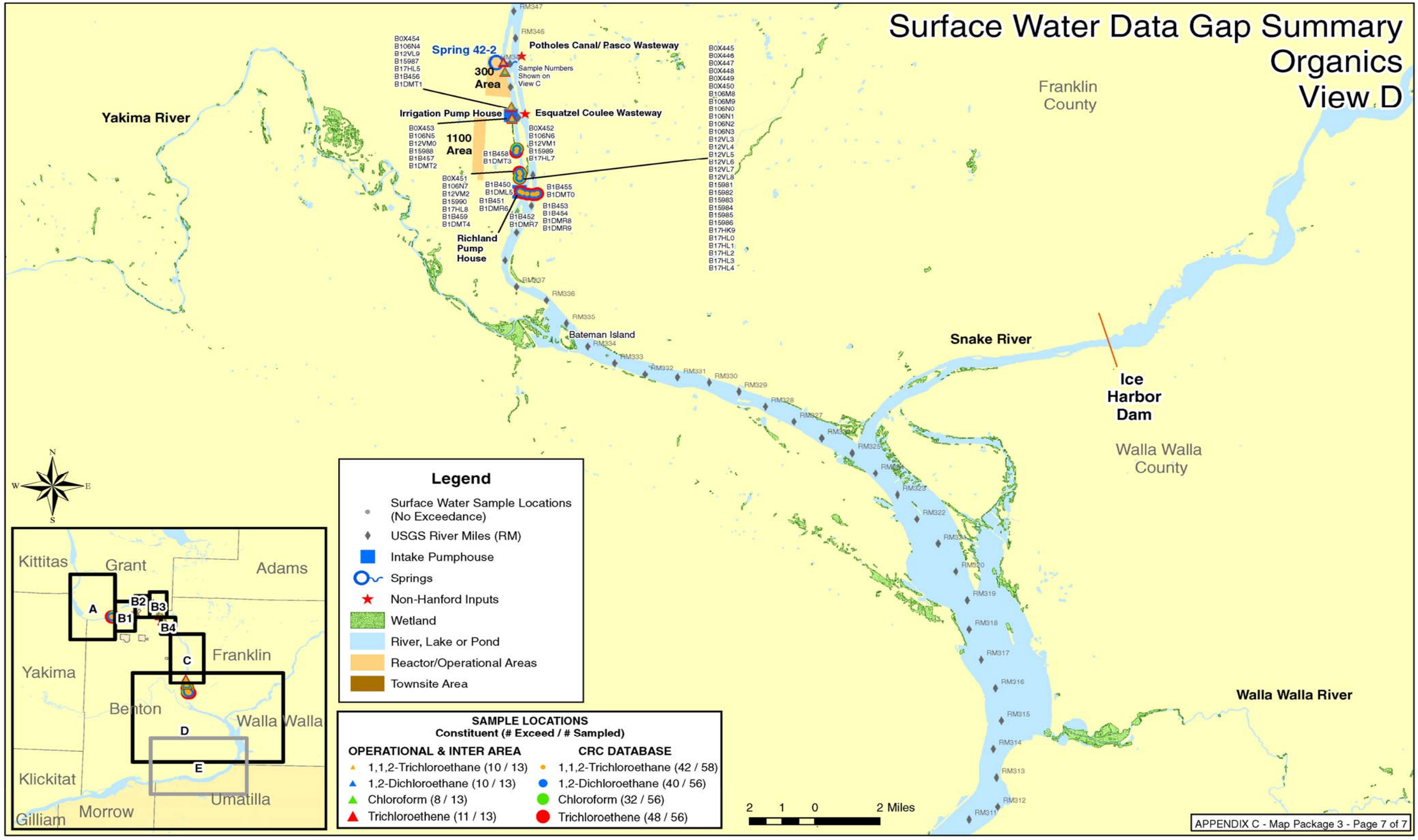
APPENDIX C - Map Package 3 - Page 3 of 7


Surface Water Data Gap Summary
Organics
View B3
Kittitas
Grant
Adams
Yakima
Franklin
Benton
Walla Walla
Klickitat
Umatilla
Gilliam
Morrow
A
B1
B2
B3
B4
C
D
E
Grant
County
RM374
RM373
RM372
RM371
RM370
RM369
RM368
RM367
100-H
B10JP6
Locke Island
WB-10 Wasteway
White
Bluffs
Townsite
Benton
County
Franklin
County
100-F
B10FB9
B13619
B17LB1
B13622
Legend
Surface Water Sample Locations
(No Exceedance)
USGS River Miles (RM)
Non-Hanford Inputs
Wetland
River, Lake or Pond
Reactor/Operational Areas
Townsite Area
N
W
E
S
0.5 0.25 0 0.5 Miles
SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)
OPERATIONAL & INTER AREA
1,1,2-Trichloroethane (5 / 5)
1,2-Dichloroethane (5 / 5)
Chloroform (5 / 5)
Trichloroethene (5 / 5)
CRC DATABASE
1,1,2-Trichloroethane (Not Sampled)
1,2-Dichloroethane (Not Sampled)
Chloroform (Not Sampled)
Trichloroethene (Not Sampled)
APPENDIX C - Map Package 3 - Page 4 of 7

Surface Water Data Gap Summary Organics View B4




Surface Water Data Gap Summary
Organics
View C
APPENDIX C - Map Package 3 - Page 6 of 7
Franklin County
Benton County
Homestead Island
Wooded Island
Savage Island
Ringold Springs
PE 16.4 Wasteway
WB-5 Wasteway
Potholes Canal/ Pasco Wasteway
Johnson Island
300 Area
Spring 28-2
Spring 42-2
RM356
RM357
RM358
RM359
RM360
RM345
RM346
RM347
RM348
RM349
RM350
RM351
RM352
RM353
RM354
RM355
B1BJ63
B1DWY6
B1BJ64
B1DW77
B0WM3
B0WM4
B108Y4
B108Y5
B12RL1
B12RL2
B15CD5
B17RR5
B17RR6
Adams
Grant
Franklin
Benton
Walla Walla
Umatilla
Kittitas
Yakima
Klickitat
Morrow
Gilliam
A
B1
B2
B3
B4
C
D
E
N
E
S
W
SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)
OPERATIONAL & INTER AREA
1,1,2-Trichloroethane (10 / 14)
1,2-Dichloroethane (9 / 13)
Chloroform (5 / 13)
Trichloroethene (12 / 13)
CRC DATABASE
1,1,2-Trichloroethane (Not Sampled)
1,2-Dichloroethane (Not Sampled)
Chloroform (Not Sampled)
Trichloroethene (Not Sampled)
Legend
Surface Water Sample Locations (No Exceedance)
USGS River Miles (RM)
Non-Hanford Inputs
Springs
Wetland
River, Lake or Pond
Reactor/Operational Areas
Townsite Area
1 0.5 0 1 Miles

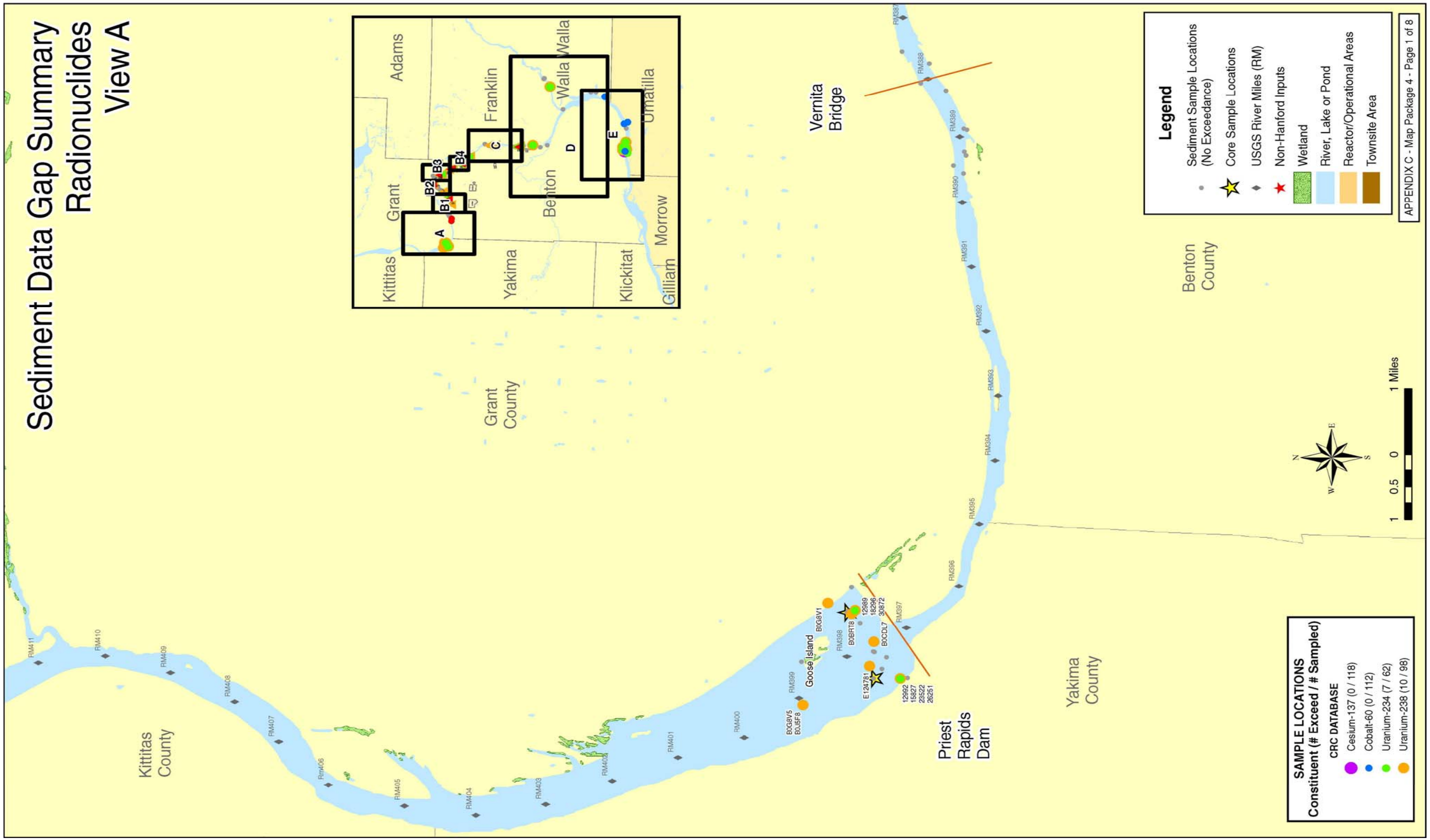

Surface Water Data Gap Summary
Organics
View D
Yakima River
Spring 42-2
Potholes Canal/ Pasco Wasteway
300 Area
Sample Numbers Shown on View C
Irrigation Pump House
Esquatzel Coulee Wasteway
1100 Area
Richland Pump House
Bateman Island
Snake River
Ice Harbor Dam
Franklin County
Walla Walla County
Walla Walla River
B0X454 B106N4 B12VL9 B15987 B17HL5 B1B456 B1DMT1
B0X453 B106N5 B12VM0 B15988 B1B457 B1DMT2
B0X451 B106N7 B12VM2 B15990 B17HL8 B1B459 B1DMT4
B0X452 B106N6 B12VM1 B15989 B17HL7
B1B458 B1DMT3
B1B450 B1DML5
B1B451 B1DMR6
B1B455 B1DMT0
B1B453 B1B454 B1DMR8 B1DMR9
B1B452 B1DMR7
B0X445 B0X446 B0X447 B0X448 B0X449 B0X450 B106M8 B106M9 B106N0 B106N1 B106N2 B106N3 B12VL3 B12VL4 B12VL5 B12VL6 B12VL7 B12VL8 B15981 B15982 B15983 B15984 B15985 B15986 B17HK9 B17HL0 B17HL1 B17HL2 B17HL3 B17HL4
RM347
RM346
RM337
RM336
RM335
RM334
RM333
RM332
RM331
RM330
RM329
RM328
RM327
RM326
RM325
RM324
RM323
RM322
RM321
RM320
RM319
RM318
RM317
RM316
RM315
RM314
RM313
RM312
RM311
N
W
E
S
Kittitas
Grant
Adams
Yakima
Franklin
Benton
Walla Walla
Klickitat
Umatilla
Morrow
Gilliam
A
B1
B2
B3
B4
C
D
E
Legend
Surface Water Sample Locations (No Exceedance)
USGS River Miles (RM)
Intake Pumphouse
Springs
Non-Hanford Inputs
Wetland
River, Lake or Pond
Reactor/Operational Areas
Townsite Area
SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)
OPERATIONAL & INTER AREA
1,1,2-Trichloroethane (10 / 13)
1,2-Dichloroethane (10 / 13)
Chloroform (8 / 13)
Trichloroethene (11 / 13)
CRC DATABASE
1,1,2-Trichloroethane (42 / 58)
1,2-Dichloroethane (40 / 56)
Chloroform (32 / 56)
Trichloroethene (48 / 56)
2 1 0 2 Miles
APPENDIX C - Map Package 3 - Page 7 of 7

MAP PACKAGE #4

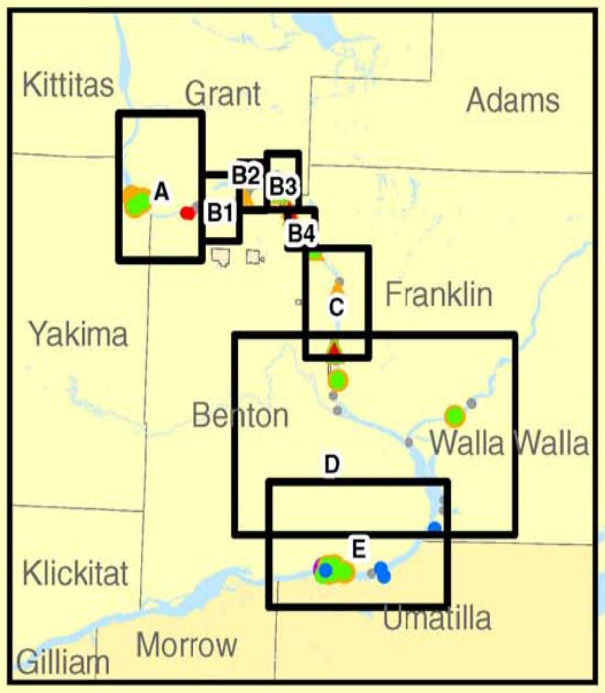
SEDIMENT DATA GAP SUMMARY

RADIONUCLIDES

Appendix C


Sediment Data Gap Summary
Radionuclides
View A
Adams
Grant
Franklin
Walla Walla
Benton
Umatilla
Kittitas
Yakima
Klickitat
Morrow
Gilliam
A
B1
B2
B3
B4
C
D
E
Vernita
Bridge
Benton
County
Grant
County
Kittitas
County
Yakima
County
Priest
Rapids
Dam
Goose Island
RM387
RM388
RM389
RM390
RM391
RM392
RM393
RM394
RM395
RM396
RM397
RM398
RM399
RM400
RM401
RM402
RM403
RM404
RM405
Rm406
RM407
RM408
RM409
RM410
RM411
B0G8V1
B0BRT8
12989
18296
30872
B0CDL7
E124781
12992
15827
23522
26251
B0G8V5
B0J5F8
Legend
Sediment Sample Locations (No Exceedance)
Core Sample Locations
USGS River Miles (RM)
Non-Hanford Inputs
Wetland
River, Lake or Pond
Reactor/Operational Areas
Townsite Area
APPENDIX C - Map Package 4 - Page 1 of 8
SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)
CRC DATABASE
Cesium-137 (0 / 118)
Cobalt-60 (0 / 112)
Uranium-234 (7 / 62)
Uranium-238 (10 / 98)
N
E
S
W
1 0.5 0 1 Miles

Sediment Data Gap Summary
Radionuclides
View B1



Grant
County

RM386
RM385
RM384
RM383
RM382
RM381
17209
B0GJY7
Coyote Island
100-B/C Area Springs
B0J5H6
B0M7T8
100-K
100-B/C

Benton
County

SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)

OPERATIONAL & INTER AREA	CRC DATABASE
Cesium-137 (0 / 29)	Cesium-137 (Not Sampled)
Cobalt-60 (0 / 30)	Cobalt-60 (Not Sampled)
Uranium-234 (1 / 21)	Uranium-234 (Not Sampled)
Uranium-238 (4 / 31)	Uranium-238 (Not Sampled)

N
W
E
S

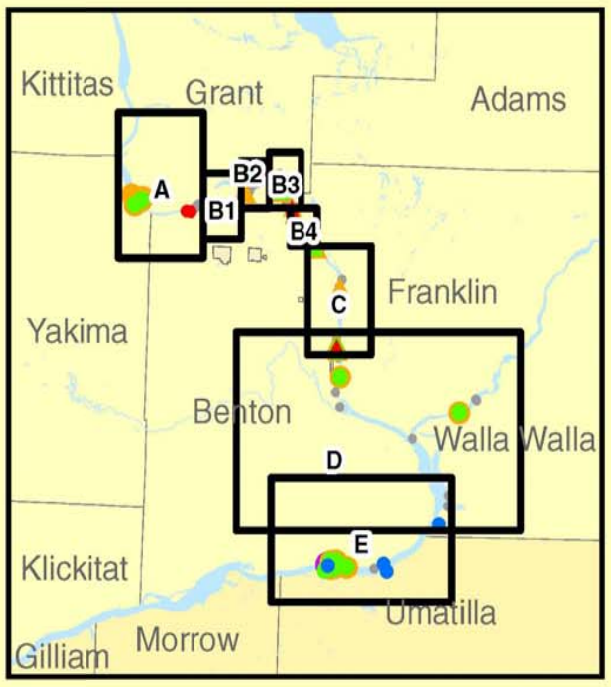
0.5 0.25 0 0.5 Miles

Legend

- Sediment Sample Locations (No Exceedance)
- Core Sample Locations
- USGS River Miles (RM)
- Non-Hanford Inputs
- Wetland
- River, Lake or Pond
- Reactor/Operational Areas
- Townsite Area

APPENDIX C - Map Package 4 - Page 2 of 8

Sediment Data Gap Summary
Radionuclides
View B2



RM375
RM376
B07NH2
RM377
D Island
100-D
RM378
Saddle Mountain Wasteway
RM379
Benton
County
12645
RM380
100-N

SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)

OPERATIONAL & INTER AREA	CRC DATABASE
Cesium-137 (0 / 27)	Cesium-137 (0 / 14)
Cobalt-60 (0 / 27)	Cobalt-60 (0 / 14)
Uranium-234 (0 / 20)	Uranium-234 (0 / 5)
Uranium-238 (2 / 27)	Uranium-238 (0 / 14)

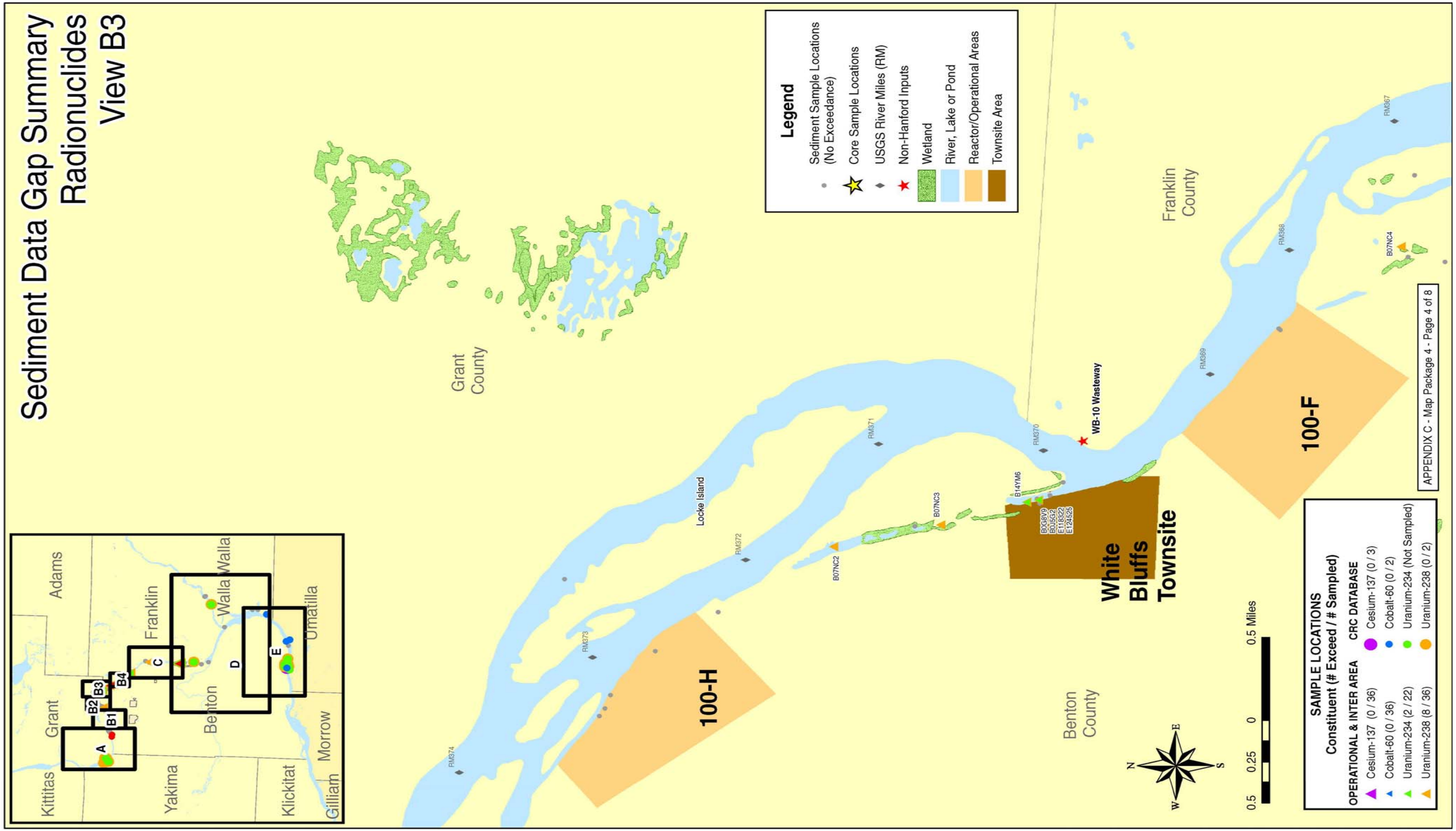
N
W
E
S

0.5 0.25 0 0.5 Miles

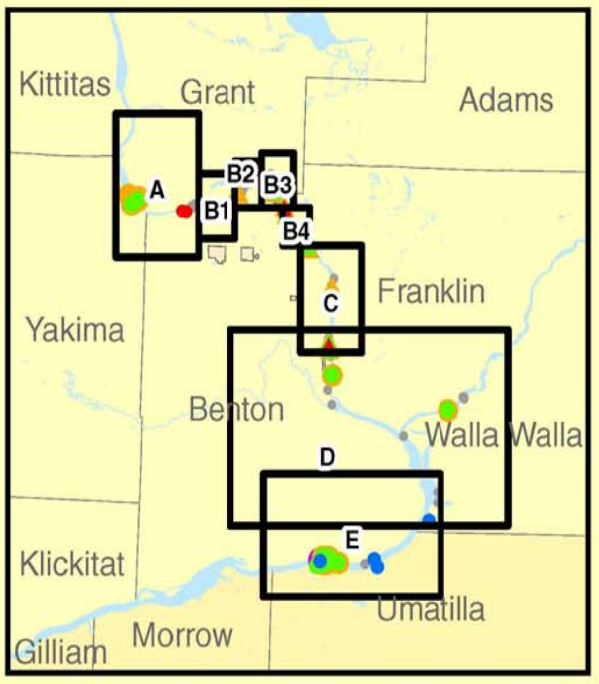
Legend

- Sediment Sample Locations (No Exceedance)
- Core Sample Locations
- USGS River Miles (RM)
- Non-Hanford Inputs
- Wetland
- River, Lake or Pond
- Reactor/Operational Areas
- Townsite Area

APPENDIX C - Map Package 4 - Page 3 of 8


Sediment Data Gap Summary
Radionuclides
View B3
Legend
Sediment Sample Locations (No Exceedance)
Core Sample Locations
USGS River Miles (RM)
Non-Hanford Inputs
Wetland
River, Lake or Pond
Reactor/Operational Areas
Townsite Area
Franklin County
Grant County
Benton County
Locke Island
White Bluffs Townsite
100-H
100-F
WB-10 Wasteway
RM367
RM368
RM369
RM370
RM371
RM372
RM373
RM374
B07NC4
B07NC3
B07NC2
B14YM6
B038Y9
B03502
E118322
E124525
APPENDIX C - Map Package 4 - Page 4 of 8
SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)
OPERATIONAL & INTER AREA
CRC DATABASE
Cesium-137 (0 / 36)
Cesium-137 (0 / 3)
Cobalt-60 (0 / 36)
Cobalt-60 (0 / 2)
Uranium-234 (2 / 22)
Uranium-234 (Not Sampled)
Uranium-238 (8 / 36)
Uranium-238 (0 / 2)
0.5 0.25 0 0.5 Miles
N
W
E
S
Adams
Grant
Franklin
Walla Walla
Benton
Umatilla
Kittitas
Yakima
Klickitat
Morrow
Gilliam
A
B1
B2
B3
B4
C
D
E

Sediment Data Gap Summary
Radionuclides
View B4



Sample Numbers Shown on View B3

B07NB9
B0GKL4
B0J5H8
29695
13166
B0BRV6
B0J5G4
E118321
B0G8W1
B0J5G6
E118323

RM367
RM366
RM365
RM364
RM363
RM362
RM361
RM360

Franklin County

Benton County

Hanford Townsite

Legend

- Sediment Sample Locations (No Exceedance)
- Core Sample Locations
- USGS River Miles (RM)
- Non-Hanford Inputs
- Wetland
- River, Lake or Pond
- Reactor/Operational Areas
- Townsite Area

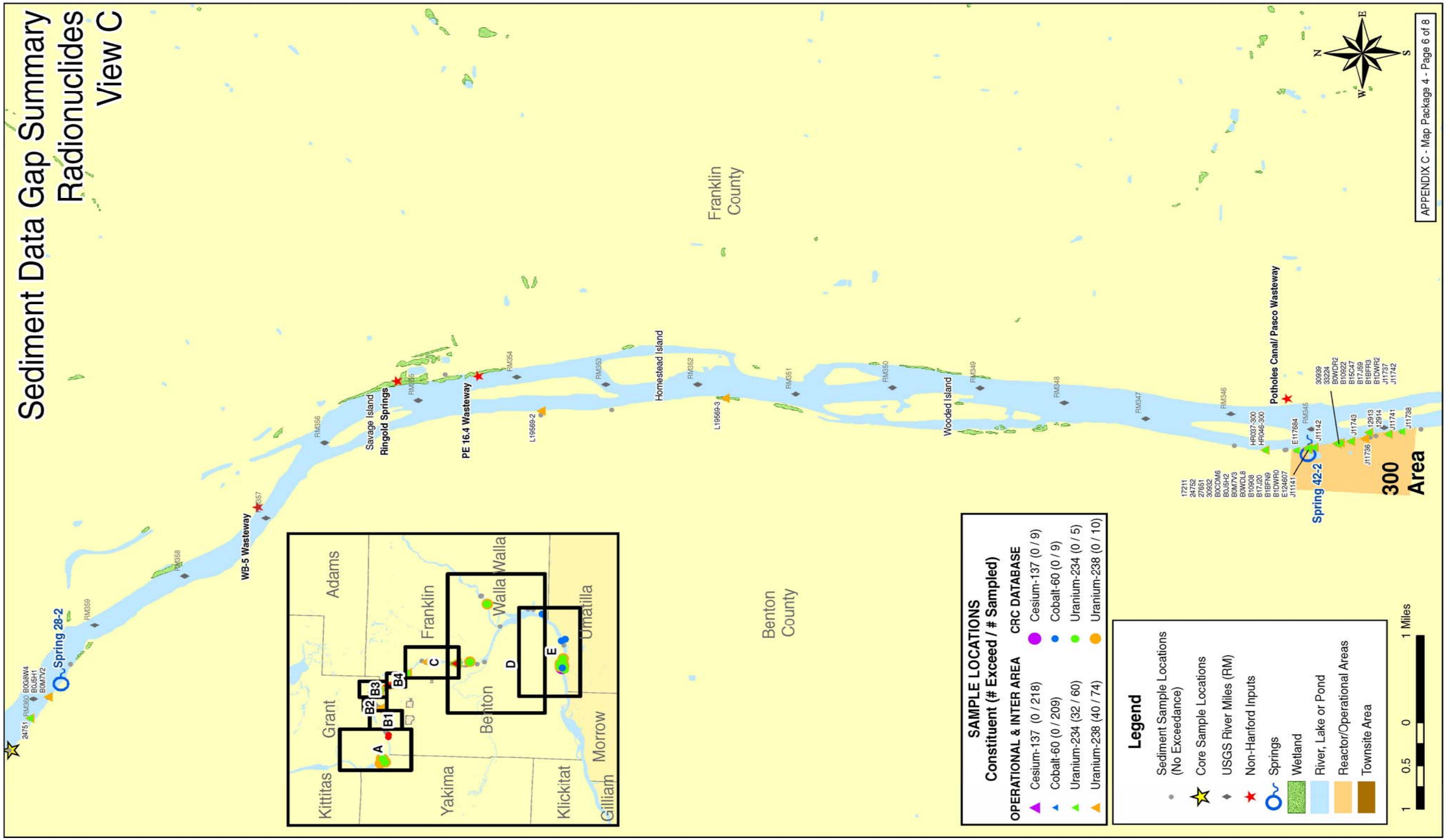
N
W
E
S

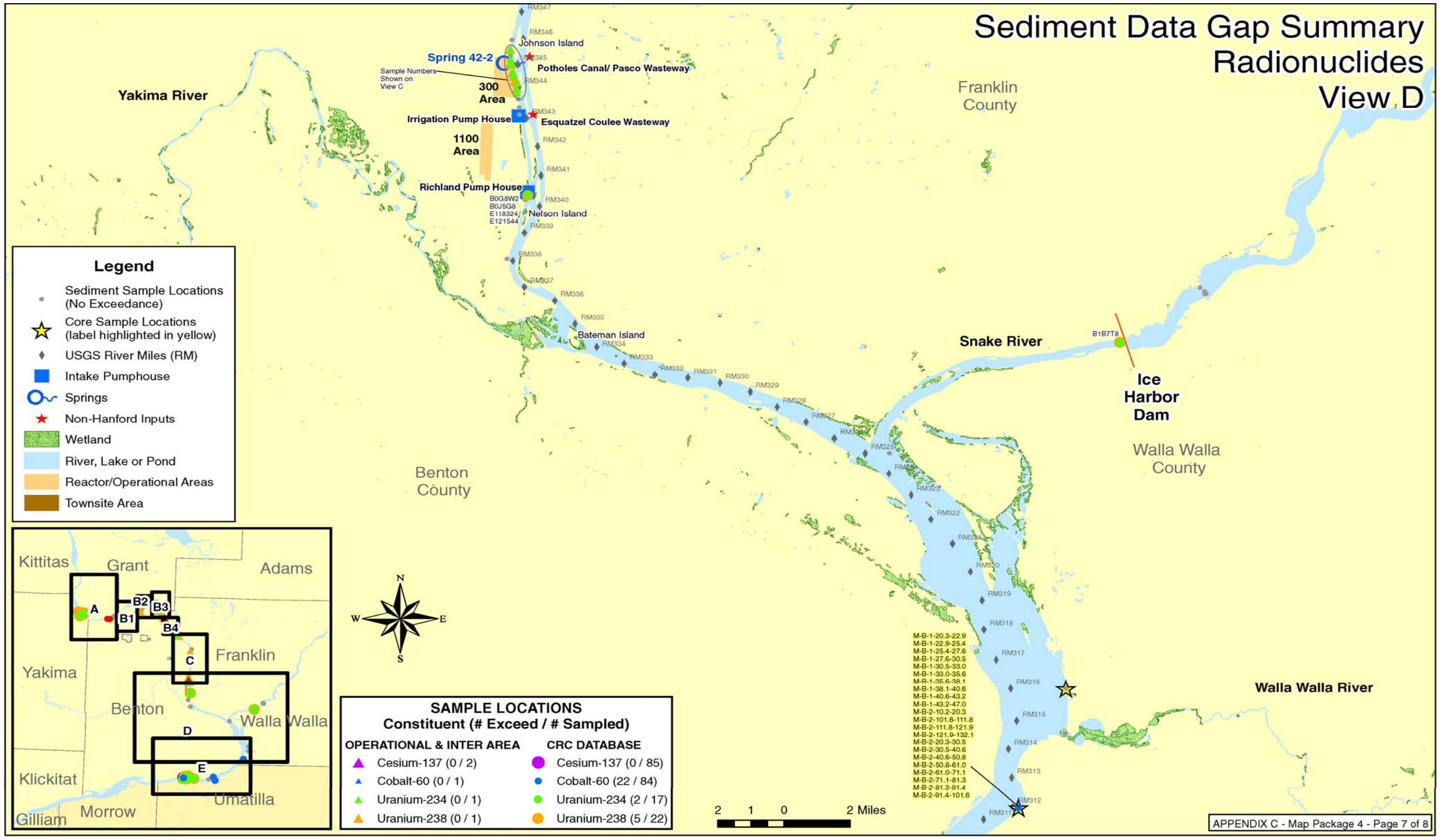
0.5 0.25 0 0.5 Miles

SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)

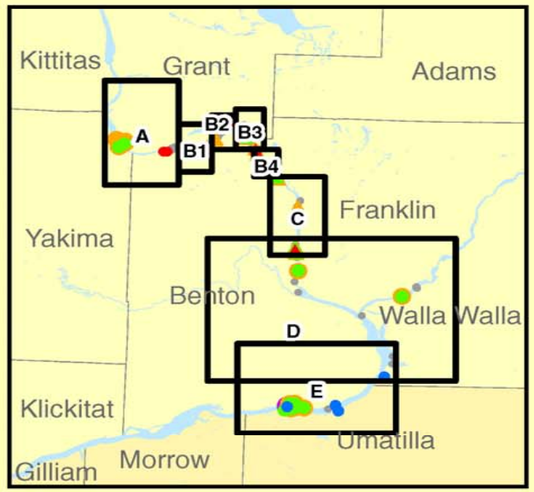
OPERATIONAL & INTER AREA	CRC DATABASE
Cesium-137 (0 / 72)	Cesium-137 (0 / 2)
Cobalt-60 (0 / 72)	Cobalt-60 (0 / 2)
Uranium-234 (4 / 50)	Uranium-234 (Not Sampled)
Uranium-238 (11 / 73)	Uranium-238 (0 / 2)

APPENDIX C - Map Package 4 - Page 5 of 8


Sediment Data Gap Summary
Radionuclides
View C
APPENDIX C - Map Package 4 - Page 6 of 8
N
S
E
W
Franklin
County
Benton
County
Savage Island
Ringold Springs
PE 16.4 Wasteway
Homestead Island
Wooded Island
Potholes Canal/ Pasco Wasteway
WB-5 Wasteway
Spring 28-2
Spring 42-2
300
Area
RM359
RM358
RM357
RM356
RM355
RM354
RM353
RM352
RM351
RM350
RM349
RM348
RM347
RM346
RM345
L19569-2
L19569-3
24751
RM360
B0G6W4
B0J6H1
B0M7V2
17211
24752
27651
30932
B0CDM6
B0J6H2
B0M7V3
B0WDL8
B10908
B17J20
B1BWR0
E124607
J11141
HR037-300
HR046-300
E117684
J11142
30939
33224
B0WDR2
B10922
B15C47
B17J59
B1BFR3
B1DWR2
J11737
J11742
J11736
12913
12914
J11741
J11743
J11738
Adams
Grant
Kittitas
Yakima
Franklin
Benton
Walla Walla
Umatilla
Morrow
Gilliam
Klickitat
A
B1
B2
B3
B4
C
D
E
SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)
OPERATIONAL & INTER AREA
CRC DATABASE
Cesium-137 (0 / 218)
Cesium-137 (0 / 9)
Cobalt-60 (0 / 209)
Cobalt-60 (0 / 9)
Uranium-234 (32 / 60)
Uranium-234 (0 / 5)
Uranium-238 (40 / 74)
Uranium-238 (0 / 10)
Legend
Sediment Sample Locations (No Exceedance)
Core Sample Locations
USGS River Miles (RM)
Non-Hanford Inputs
Springs
Wetland
River, Lake or Pond
Reactor/Operational Areas
Townsite Area
1 Miles
1
0.5
0


Sediment Data Gap Summary
Radionuclides
View D
Yakima River
Franklin County
Spring 42-2
Sample Numbers Shown on View C
300 Area
Johnson Island
Potholes Canal/ Pasco Wasteway
Irrigation Pump House
Esquatzel Coulee Wasteway
1100 Area
Richland Pump House
B0G8W2
B0J5G8
E118324
E121544
Nelson Island
Bateman Island
Snake River
B1B7T8
Ice Harbor Dam
Walla Walla County
Benton County
Walla Walla River
M-B-1-20.3-22.9
M-B-1-22.9-25.4
M-B-1-25.4-27.6
M-B-1-27.6-30.5
M-B-1-30.5-33.0
M-B-1-33.0-35.6
M-B-1-35.6-38.1
M-B-1-38.1-40.6
M-B-1-40.6-43.2
M-B-1-43.2-47.0
M-B-2-10.2-20.3
M-B-2-101.6-111.8
M-B-2-111.8-121.9
M-B-2-121.9-132.1
M-B-2-20.3-30.5
M-B-2-30.5-40.6
M-B-2-40.6-50.8
M-B-2-50.8-61.0
M-B-2-61.0-71.1
M-B-2-71.1-81.3
M-B-2-81.3-91.4
M-B-2-91.4-101.6
Legend
Sediment Sample Locations (No Exceedance)
Core Sample Locations (label highlighted in yellow)
USGS River Miles (RM)
Intake Pumphouse
Springs
Non-Hanford Inputs
Wetland
River, Lake or Pond
Reactor/Operational Areas
Townsite Area
Kittitas
Grant
Adams
Franklin
Yakima
Benton
Walla Walla
Klickitat
Umatilla
Gilliam
Morrow
A
B1
B2
B3
B4
C
D
E
N
W
E
S
SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)
OPERATIONAL & INTER AREA
Cesium-137 (0 / 2)
Cobalt-60 (0 / 1)
Uranium-234 (0 / 1)
Uranium-238 (0 / 1)
CRC DATABASE
Cesium-137 (0 / 85)
Cobalt-60 (22 / 84)
Uranium-234 (2 / 17)
Uranium-238 (5 / 22)
2 1 0 2 Miles
APPENDIX C - Map Package 4 - Page 7 of 8

Sediment Data Gap Summary
Radionuclides
View E



M-F-10.2-12.7
M-F-12.7-15.2
M-F-15.2-17.9
M-F-17.9-20.3
M-F-20.3-22.9
M-F-22.9-25.4
M-F-25.4-27.9
M-F-27.9-30.5
M-F-30.5-33.0
M-F-33.0-35.6
M-F-35.6-38.1
M-F-38.1-40.6
M-F-40.6-43.2
M-F-43.2-45.7
M-F-45.7-48.3
M-F-48.3-50.8
M-F-50.8-53.5
M-F-53.5-55.9
M-F-55.9-58.4
M-F-7.6-10.2
M-G-1-10.2-12.7
M-G-1-12.7-15.2
M-G-1-15.2-17.8
M-G-1-17.8-20.3
M-G-1-20.3-22.9
M-G-1-22.9-25.4
M-G-1-25.4-27.9
M-G-1-27.9-30.5
M-G-1-30.5-33.0
M-G-1-33.0-35.6
M-G-1-35.6-38.1
M-G-1-38.1-40.6
M-G-1-40.6-43.2
M-G-1-43.2-45.7
M-G-1-45.7-48.3
M-G-1-48.3-50.8
M-G-1-5.1-10.2
M-G-1-50.8-53.5
M-G-1-53.5-55.9
M-G-1-55.9-58.4
M-G-1-58.4-61.0
M-G-1-61.0-63.5
M-G-1-63.5-68.6
M-G-2-10.2-20.3
M-G-2-101.6-111.8
M-G-2-111.8-121.9
M-G-2-121.9-132.1
M-G-2-132.1-142.2
M-G-2-142.2-152.4
M-G-2-152.4-162.6
M-G-2-162.6-172.7
M-G-2-20.3-30.5
M-G-2-30.5-40.6
M-G-2-40.6-50.8
M-G-2-50.8-61.0
M-G-2-61.0-71.1
M-G-2-71.1-81.3
M-G-2-81.3-91.4
M-G-2-91.4-101.6
M-G-3-106.7-116.8
M-G-3-116.8-127.0
M-G-3-127.0-137.2
M-G-3-137.2-147.3
M-G-3-147.3-157.4
M-G-3-15.2-25.4
M-G-3-25.4-35.6
M-G-3-35.6-45.7
M-G-3-45.7-55.9
M-G-3-55.9-66.0
M-G-3-66.0-76.2
M-G-3-76.2-86.4
M-G-3-86.4-96.5
M-G-3-96.5-106.7

12986
15829
16953
18467
19680
20750
23516
B0BRS5
B0CDK5
B0G8T5
E033017
E119891
E119903
E124478

12988
24746
26248
29044
30871

B0BRS9
B0G8T9
B0J5F2
E119905

33603

12987
15830
16954
19468
19681
20751
31811
31812

B0BRS7
B0CDK7
B0G8T7
B0J5F0
B17BP3
E033018
E119892
E124480

16952
18469
19682
20752
23515
24743
29043
30870
31810

B0CDK3
B0G8T3
B0J5D6
B17BP2
E033016
E119902

B17BP1

B1D0D5

M-D-0-2.5
M-D-10.2-12.7
M-D-12.7
M-D-15.2
M-D-17.8
M-D-2.5-5.1
M-D-20.3
M-D-22.9
M-D-25.4
M-D-5.1-7.6
M-D-7.6-10.2

M-C-15.2-17.8
M-C-25.4-27.9
M-C-27.9-30.5
M-C-30.5-33.0
M-C-33.0-35.6
M-C-38.1-40.6
M-C-40.6-43.2
M-C-43.2-45.7
M-C-45.7-48.3
M-C-48.3-50.8
M-C-50.8-53.5
M-C-53.5-55.9
M-C-55.9-58.4
M-C-58.4-63.5

RM318
RM317
RM316
RM315
RM314
RM313
RM312
RM311
RM310
RM309
RM308
RM307
RM306
RM305
RM304
RM303
RM302
RM301
RM300
RM299
RM298
RM297
RM296
RM295
RM294
RM293
RM292
RM291
RM290
RM289
RM288
RM287
RM286
RM285
RM284

Walla Walla County
Umatilla County
Morrow County
McNary Dam

Sample Numbers Shown on View D

2 1 0 2 Miles

N
W
E
S

Legend

- Sediment Sample Locations (No Exceedance)
- Core Sample Locations (label highlighted in yellow)
- USGS River Miles (RM)
- Non-Hanford Inputs
- Wetland
- River, Lake or Pond
- Reactor/Operational Areas
- Townsite Area

SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)

CRC DATABASE

- Cesium-137 (4 / 277)
- Cobalt-60 (98 / 257)
- Uranium-234 (39 / 79)
- Uranium-238 (41 / 113)

APPENDIX C - Map Package 4 - Page 8 of 8

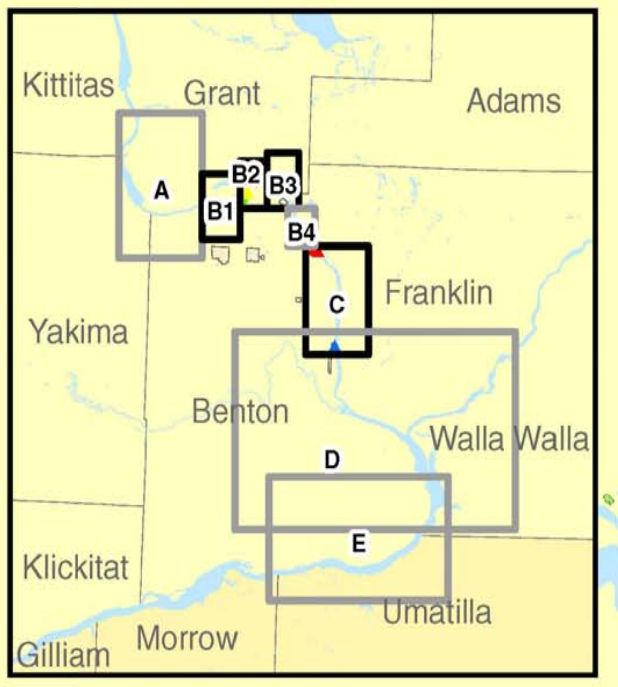
MAP PACKAGE #5

SURFACE WATER DATA GAP SUMMARY

RADIONUCLIDES

Appendix C

Surface Water Data Gap Summary
Radionuclides
View B1



Grant
County

RM386
RM385
RM384
RM383
RM382
RM381
100-B/C Area Springs
B0VW80
Coyote Island
100-K
100-B/C

Benton
County

SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)

OPERATIONAL & INTER AREA	CRC DATABASE
Strontium-90 (0 / 74)	Strontium-90 (Not Sampled)
Tritium (1 / 106)	Tritium (Not Sampled)
Uranium-234 (0 /3)	Uranium-234 (Not Sampled)
Uranium-238 (0 / 3)	Uranium-238 (Not Sampled)

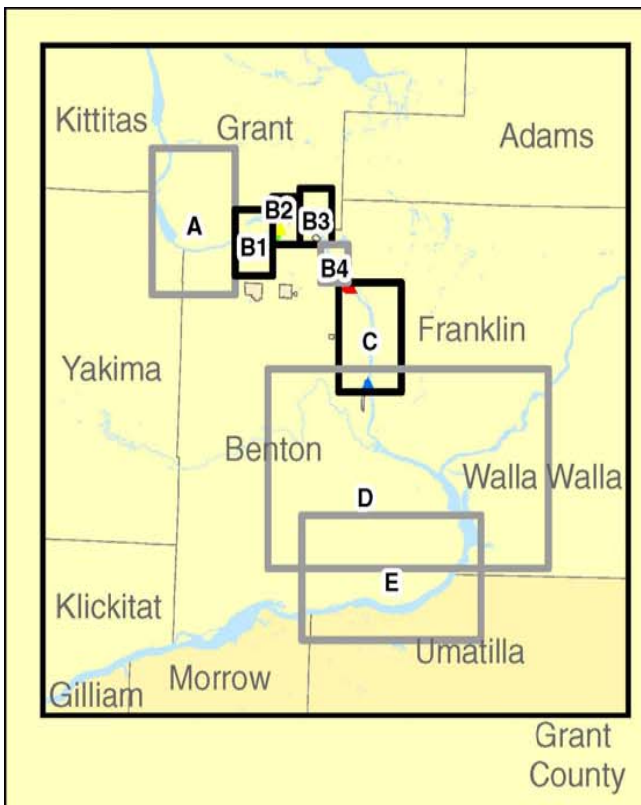
N
W
E
S

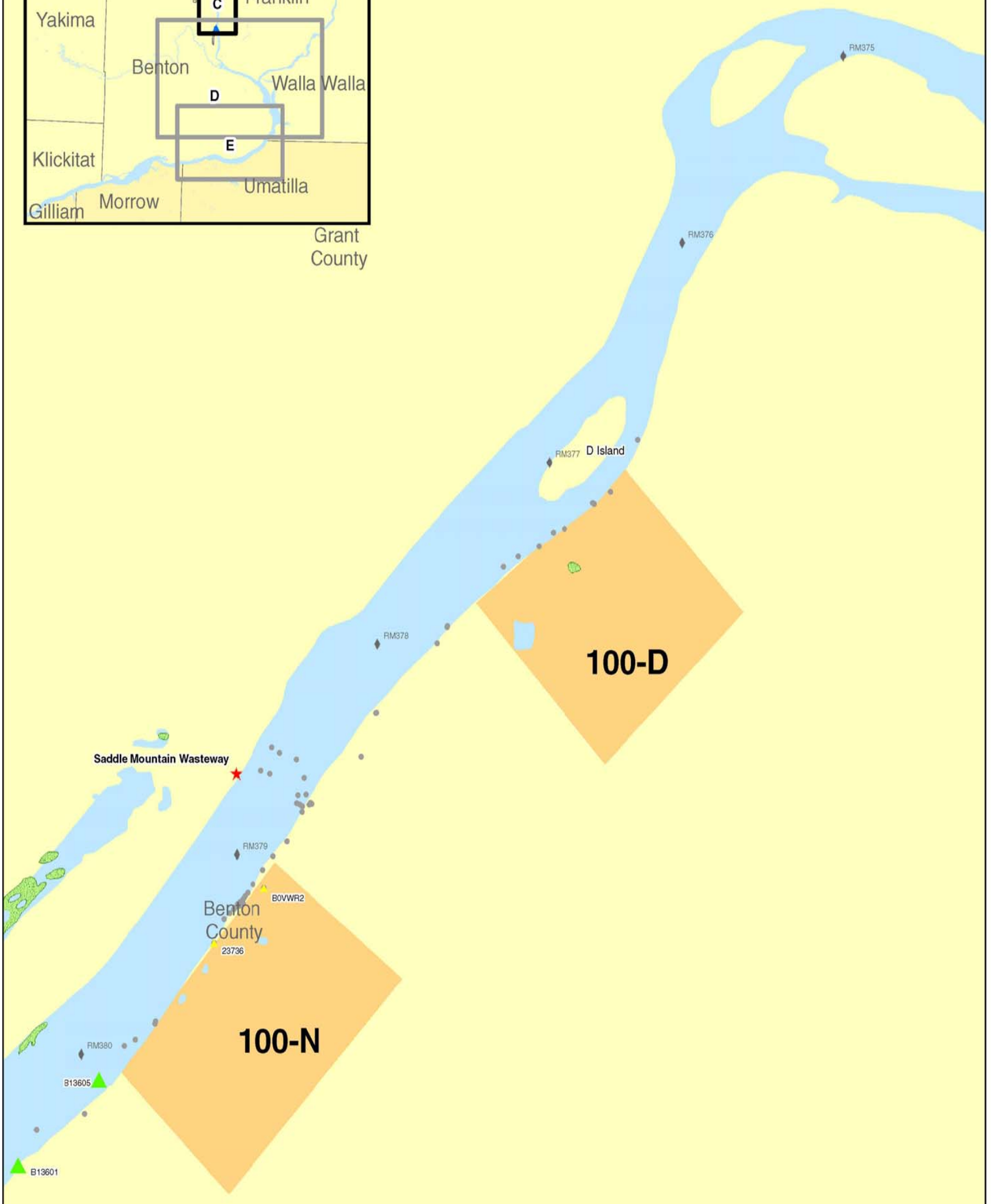
0.5 0.25 0 0.5 Miles

Legend
- Surface Water Sample Locations (No Exceedance)
- USGS River Miles (RM)
- Non-Hanford Inputs
- Wetland
- River, Lake or Pond
- Reactor/Operational Areas
- Townsite Area

APPENDIX C - Map Package 5 - Page 1 of 4

Surface Water Data Gap Summary
Radionuclides
View B2





SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)

OPERATIONAL & INTER AREA	CRC DATABASE
Strontium-90 (2 / 169)	Strontium-90 (0 / 13)
Tritium (0 / 194)	Tritium (0 / 13)
Uranium-234 (0 / 113)	Uranium-234 (0 / 13)
Uranium-238 (2 / 115)	Uranium-238 (0 / 13)

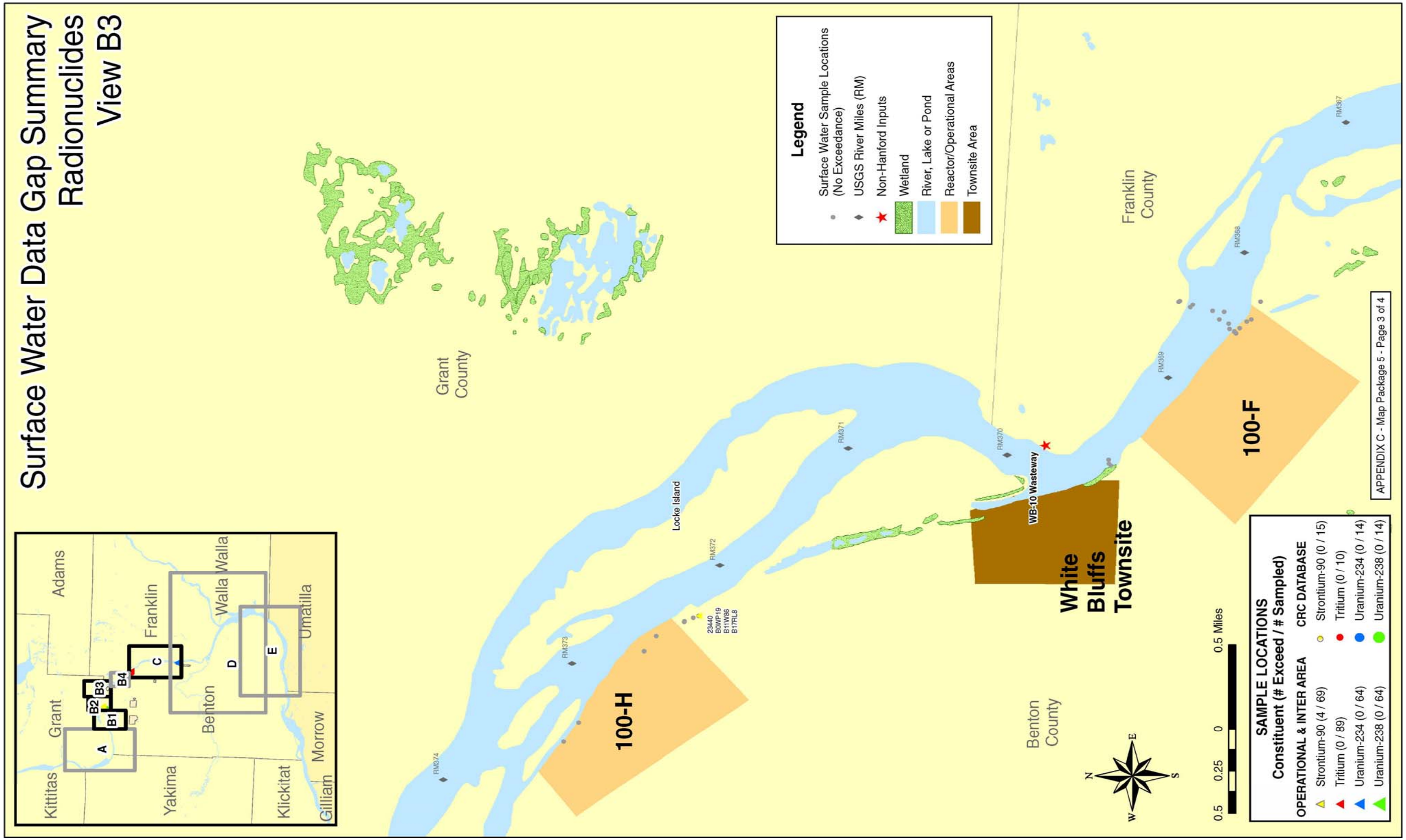
N
W
E
S

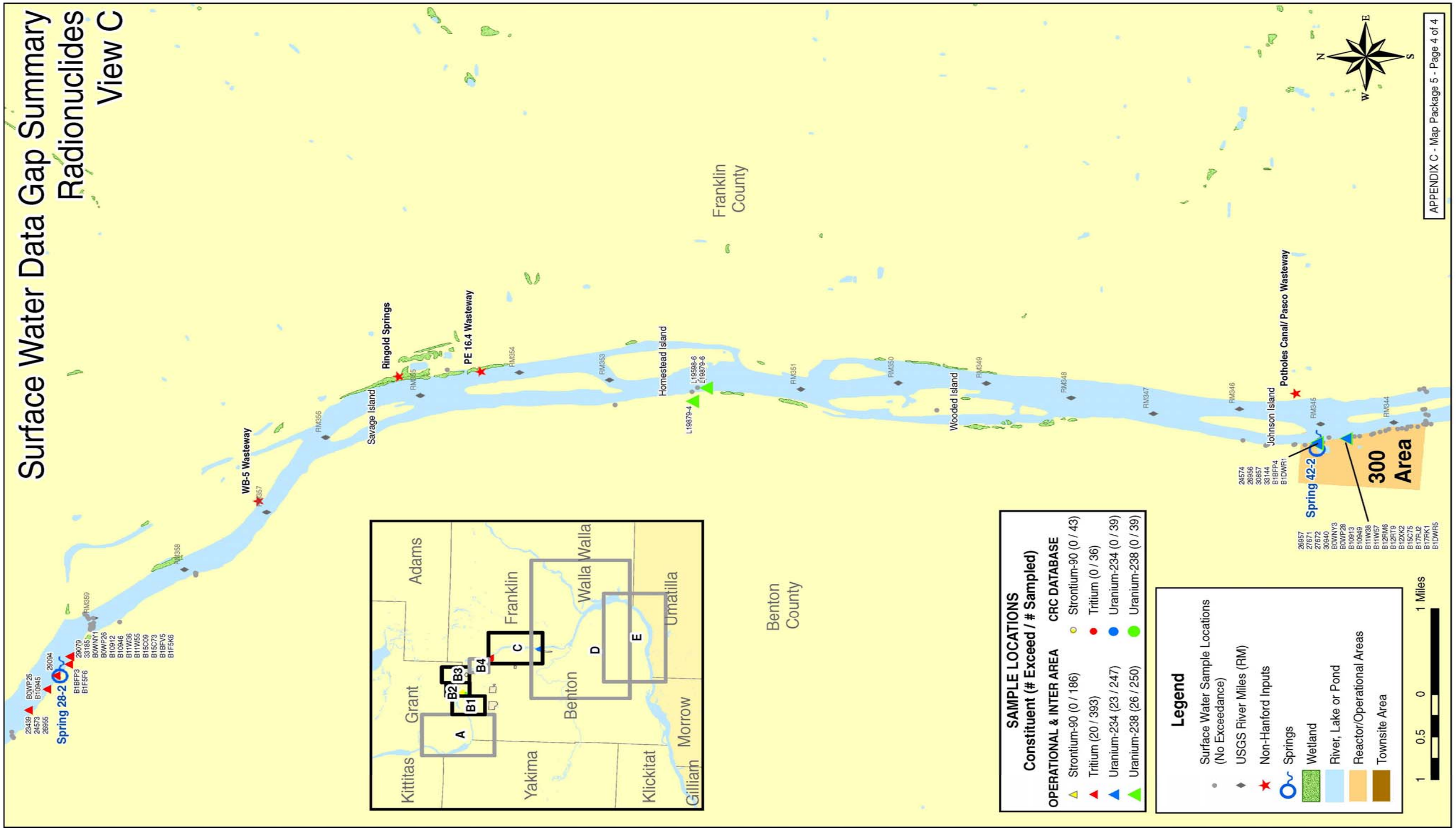
0.5 0.25 0 0.5 Miles

Legend

- Surface Water Sample Locations (No Exceedance)
- USGS River Miles (RM)
- Non-Hanford Inputs
- Wetland
- River, Lake or Pond
- Reactor/Operational Areas
- Townsite Area

APPENDIX C - Map Package 5 - Page 2 of 4


Surface Water Data Gap Summary
Radionuclides
View B3
Legend
Surface Water Sample Locations (No Exceedance)
USGS River Miles (RM)
Non-Hanford Inputs
Wetland
River, Lake or Pond
Reactor/Operational Areas
Townsite Area
Grant County
Franklin County
Benton County
Locke Island
RM374
RM373
RM372
RM371
RM370
RM369
RM368
RM367
23440
B0WP19
B11W86
B17RL8
WB-10 Wasteway
100-H
White Bluffs Townsite
100-F
N
E
S
W
0.5 0.25 0 0.5 Miles
SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)
OPERATIONAL & INTER AREA
Strontium-90 (4 / 69)
Tritium (0 / 89)
Uranium-234 (0 / 64)
Uranium-238 (0 / 64)
CRC DATABASE
Strontium-90 (0 / 15)
Tritium (0 / 10)
Uranium-234 (0 / 14)
Uranium-238 (0 / 14)
APPENDIX C - Map Package 5 - Page 3 of 4
Kittitas
Adams
Grant
Franklin
Yakima
Benton
Walla Walla
Klickitat
Umatilla
Morrow
Gilliam
A
B1
B2
B3
B4
C
D
E


Surface Water Data Gap Summary
Radionuclides
View C
APPENDIX C - Map Package 5 - Page 4 of 4
N
E
S
W
Franklin County
Benton County
Savage Island
Ringold Springs
PE 16.4 Wasteway
WB-5 Wasteway
Homestead Island
Wooded Island
Johnson Island
Potholes Canal/ Pasco Wasteway
Spring 28-2
Spring 42-2
300 Area
RM356
RM355
RM354
RM353
RM351
RM350
RM349
RM348
RM347
RM346
RM345
RM344
RM359
RM358
RM357
L19598-6
L19879-6
L19879-4
B0WP25
B10945
29094
23439
24573
26955
B1BFP3
B1F6F6
29079
33185
B0WNY1
B0WP26
B10912
B10946
B11W36
B11W55
B15C29
B15C73
B1BFV5
B1F5K6
24574
26956
30857
33144
B1BFP4
B1DWR1
26957
27671
27672
30940
B0WNY3
B0WP28
B10913
B10949
B11W38
B11W57
B12RW6
B12W79
B15C72
B15C75
B17RJ2
B17RK1
B1DWR5
Adams
Grant
Kittitas
Yakima
Franklin
Benton
Walla Walla
Umatilla
Morrow
Gilliam
Klickitat
A
B1
B2
B3
B4
C
D
E
SAMPLE LOCATIONS
Constituent (# Exceed / # Sampled)
OPERATIONAL & INTER AREA
Strontium-90 (0 / 186)
Tritium (20 / 393)
Uranium-234 (23 / 247)
Uranium-238 (26 / 250)
CRC DATABASE
Strontium-90 (0 / 43)
Tritium (0 / 36)
Uranium-234 (0 / 39)
Uranium-238 (0 / 39)
Legend
Surface Water Sample Locations (No Exceedance)
USGS River Miles (RM)
Non-Hanford Inputs
Springs
Wetland
River, Lake or Pond
Reactor/Operational Areas
Townsite Area
1
0.5
0
1 Miles

APPENDIX D

DATA TABLES

TABLES

NOTE: Tables D-2 through D-6 are located on attached CD.

Table D-1. Laboratory Qualifier Definitions. (2 Pages)

QUALIFIER	DEFINITION
*	INORGANICS - Duplicate analysis not within control limits.
+	INORGANICS - Correlation coefficient for Method of Standard Additions (MSA) is < 0.995.
>	WETCHEM - Result greater than quantifiable range or greater than upper limit of the analysis range.
A	ORGANICS - Valid for TICs only: The TIC is a suspected aldol-condensation product.
B	INORGANICS and WETCHEM - The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). ORGANICS - The analyte was detected in both the associated QC blank and in the sample. RATIONUCLIDES (HEISPROD/PNLGW) - The associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample. (SESP) - The associated QC sample blank has a result >= MDA and, after corrections, result is >= MDA for this sample.
C	INORGANICS/WETCHEM: The analyte was detected in both the sample and the associated QC blank, and the sample concentration was <= 5X the blank concentration. ORGANICS (PESTICIDE only) - The identification of a pesticide confirmed by gas chromatograph/mass spectrometer (GC/MS).
D	ORGANICS/WETCHEM - Analyte was identified in an analysis at a secondary dilution factor (i.e., dilution factor different than 1.0).
E	INORGANICS - Reported value is estimated because of interference. See comment on cover page, hardcopy case narrative, or specific inorganic hardcopy data sheet. ORGANICS - Concentration exceeds the calibration range of the GC/MS. Not applicable for PESTICIDES/PCBs.
J	ALL - The reported value is an estimate. Analyte was analyzed for and detected, but has potentially larger associated error factors in the result. If this qualifier is applied for any reason other than results reported close to the analytical detection limit, an explanation must be provided in be associated hardcopy Sample Data Summary Package and/or case narrative.
K	Values exist in the LESS_THAN_VALUE and/or GREATER_THAN_VALUE fields.
L	MDL <= value < CRQL (RETIRED)
M	INORGANICS - Duplicate precision criteria not met.
N	ALL (except GC/MS based analysis) - Spike sample recovery is outside control limits. ORGANICS (GC/MS only) - Presumptive evidence of compound based on mass spectral library search.
NA	Not Available
P	ORGANICS (PCB only) - Aroclor target analyte with greater than 25% difference between column analyses.
Q	ORGANICS (Dioxins only) - Estimated maximum concentration. Used if one of the qualitative identification criteria is not met (e.g., Cl isotopic rations outside theoretical range.)
S	INORGANICS - Reported value determined by the Method of Standard Additions (MSA).
U	ALL - Analyzed for but not detected above limiting criteria. NOTE: Limiting criteria may be any of the following: value reported < 0; value reported < counting error; value reported < total analytical error; value_rptd <=contract MDL/IDL/MDA/PQL.

Table D-1. Laboratory Qualifier Definitions. (2 Pages)

QUALIFIER	DEFINITION
W	INORGANICS - Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
X	ALL - Other specific flags and notes required to properly qualify the result are described in the hardcopy Sample Data Summary Package and/or Case narrative. Additional information may be found in the RESULT_COMMENT field for this record.
Y	Same as X if more than one flag is required.
Z	Same as X and Y if more than two flags are required.
Note	A character string containing codes in combinations that qualify the associated result. These codes are generally reported by the analytical laboratory, but may be derived by the data owner. Different categories of constituents may have different permitted combinations of valid qualifiers; however, "B" and "U" are mutually exclusive qualifiers for all categories.

Source: Heis Result Table Description, Version: March 14, 2002

Table D-2. Metals Data in Sediment Supporting Map Package #1 (26 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7W4	9/20/2004			PRD-MID-RIVER NEAR DAM	1		Arsenic	9.06	mg/kg	X	6.383	57.000	0.390
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7W4	9/20/2004			PRD-MID-RIVER NEAR DAM	1		Chromium	89.10	mg/kg	X	42.065	260.000	30.000
ViewA	100 Area Columbia River Sediment Sampling	1/1/1993	B07NF5	11/20/1992	Grab	Columbia River	Hanford Reach - Vernita Area	1	TMA	Antimony	4.20	mg/kg	UJN	0.972	3.000	31.000
ViewA	100 Area Columbia River Sediment Sampling	1/1/1993	B07NF6	11/20/1992	Grab	Columbia River	Hanford Reach - Vernita Area	1	TMA	Antimony	4.20	mg/kg	UJN	0.972	3.000	31.000
ViewA	100 Area Columbia River Sediment Sampling	1/1/1993	B07NF7	11/20/1992	Grab	Columbia River	Hanford Reach - Vernita Area	1	TMA	Antimony	4.00	mg/kg	UJN	0.972	3.000	31.000
ViewA	100 Area Columbia River Sediment Sampling	1/1/1993	B07NF8	11/20/1992	Grab	Columbia River	Hanford Reach - Vernita Area	1	TMA	Antimony	4.00	mg/kg	UJN	0.972	3.000	31.000
ViewA	Hanford Site Environmental Report for Calendar Year 1995	1/1/1996	B0CWD6	7/24/1995	Grab	Columbia River	PRD-1/3 GRANT SHORE	1		Antimony	3.40	mg/kg	L	0.972	3.000	31.000
ViewA	Hanford Site Environmental Report for Calendar Year 1996	1/1/1997	B0G192	8/15/1996	Grab	Columbia River	PRD-GRANT COUNTY	1	coordinates estimated	Antimony	3.30	mg/kg	L	0.972	3.000	31.000
ViewA	100 Area Columbia River Sediment Sampling	1/1/1993	B07NF5	11/20/1992	Grab	Columbia River	Hanford Reach - Vernita Area	1	TMA	Arsenic	9.40	mg/kg	JN	6.383	57.000	0.390
ViewA	100/300 Areas RCBRA	6/11/2007	J116M3	2/9/2006	Grab	RCBRA REFERENCE	AQUATIC SITE 13	1		Arsenic	7.90	mg/kg	NA	6.383	57.000	0.390
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3N3	8/3/1999		Columbia River	PRD-YAKIMA SIDE NEAR DAM	1		Arsenic	9.96	mg/kg		6.383	57.000	0.390
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3N5	8/3/1999		Columbia River	PRD-GRANT SIDE NEAR DAM	1		Arsenic	9.35	mg/kg		6.383	57.000	0.390
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3D6	8/3/1999		Columbia River	PRD-GRANT COUNTY	1		Arsenic	8.64	mg/kg		6.383	57.000	0.390
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3F0	8/3/1999		Columbia River	PRD-2/3 GRANT SHORE	1		Arsenic	6.72	mg/kg		6.383	57.000	0.390
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3F2	8/3/1999		Columbia River	PRD-YAKIMA CNTY SHOR	1		Arsenic	9.85	mg/kg		6.383	57.000	0.390
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CL9	7/19/2001	Grab	Columbia River	PRD-YAKIMA SIDE NEAR DAM	1		Arsenic	8.23	mg/kg		6.383	57.000	0.390
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CM1	7/19/2001	Grab	Columbia River	PRD-GRANT SIDE NEAR DAM	1		Arsenic	9.57	mg/kg		6.383	57.000	0.390
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RY7	8/28/2001	Grab	Columbia River	VERNITA BRIDGE -1	1		Arsenic	6.48	mg/kg		6.383	57.000	0.390
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14YN0	7/23/2002	Grab	Columbia River	PRD-YAKIMA SIDE NEAR DAM	1		Arsenic	10.70	mg/kg		6.383	57.000	0.390
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14YN2	7/23/2002	Grab	Columbia River	PRD-GRANT SIDE NEAR DAM	1		Arsenic	11.40	mg/kg		6.383	57.000	0.390
ViewA	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17704	7/14/2003	Grab	Columbia River	PRD-GRANT SIDE NEAR DAM	1		Arsenic	9.73	mg/kg	X	6.383	57.000	0.390

Table D-2. Metals Data in Sediment Supporting Map Package #1 (26 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewA	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17H17	8/25/2003	Grab	Columbia River	100 B/C AREA UR	1		Arsenic	15.10	mg/kg	X	6.383	57.000	0.390
ViewA	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HB2	8/25/2003	Grab	Columbia River	100 B/C AREA UR	1		Arsenic	11.90	mg/kg	X	6.383	57.000	0.390
ViewA	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4444205	6/1/2004	Grab	Columbia River	Above Priest Rapids Dam	1	Petite Ponar (Comp.)	Arsenic	7.60	mg/kg		6.383	57.000	0.390
ViewA	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4444206	6/1/2004	Grab	Columbia River	Above Priest Rapids Dam	1	Petite Ponar (Comp.)	Arsenic	7.60	mg/kg		6.383	57.000	0.390
ViewA	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17702	7/14/2003	Grab	Columbia River	Above Priest Rapids Dam - Yakima County Shore	1		Arsenic	9.20	mg/kg		6.383	57.000	0.390
ViewA	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17704	7/14/2003	Grab	Columbia River	Above Priest Rapids Dam - Grant County Shore	1		Arsenic	9.73	mg/kg		6.383	57.000	0.390
ViewA	An Evaluation of Water Quality and Limnology for the Priest Rapids Project Area	8/1/2000	GOO-3A	10/1/1999	Grab	Columbia River	RM 398.5 - Goose Island	2	RM 398.5	Arsenic	12.00	mg/kg		6.383	57.000	0.390
ViewA	An Evaluation of Water Quality and Limnology for the Priest Rapids Project Area	8/1/2000	GOO-1	10/1/1999	Grab	Columbia River	RM 398.5 - Goose Island	2	RM 398.5	Arsenic	11.00	mg/kg		6.383	57.000	0.390
ViewA	An Evaluation of Water Quality and Limnology for the Priest Rapids Project Area	8/1/2000	GOO-2	10/1/1999	Grab	Columbia River	RM 398.5 - Goose Island	2	RM 398.5	Arsenic	12.00	mg/kg		6.383	57.000	0.390
ViewA	An Evaluation of Water Quality and Limnology for the Priest Rapids Project Area	8/1/2000	GOO-3B	10/1/1999	Grab	Columbia River	RM 398.5 - Goose Island	2	RM 398.5	Arsenic	11.00	mg/kg		6.383	57.000	0.390
ViewA	An Evaluation of Water Quality and Limnology for the Priest Rapids Project Area	8/1/2000	GOO-3C	10/1/1999	Grab	Columbia River	RM 398.5 - Goose Island	2	RM 398.5	Arsenic	9.00	mg/kg		6.383	57.000	0.390
ViewA	An Evaluation of Water Quality and Limnology for the Priest Rapids Project Area	8/1/2000	GOO-4	10/1/1999	Grab	Columbia River	RM 398.5 - Goose Island	2	RM 398.5	Arsenic	11.00	mg/kg		6.383	57.000	0.390
ViewA	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B19PK9	7/12/2004		Columbia River	PRD-YAKIMA SIDE NEAR DAM	1		Arsenic	9.06	mg/kg	X	6.383	57.000	0.390
ViewA	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B19PL1	7/12/2004		Columbia River	PRD-GRANT SIDE NEAR DAM	1		Arsenic	11.20	mg/kg	X	6.383	57.000	0.390
ViewA	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1D0C4	8/8/2005		Columbia River	PRD-YAKIMA SIDE NEAR DAM	1		Arsenic	9.01	mg/kg	X	6.383	57.000	0.390

Table D-2. Metals Data in Sediment Supporting Map Package #1 (26 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewA	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1D0C6	8/8/2005		Columbia River	PRD-GRANT SIDE NEAR DAM	1		Arsenic	9.27	mg/kg	X	6.383	57.000	0.390
ViewA	100/300 Areas RCBRA	6/11/2007	J116M0	2/9/2006	Grab	RCBRA REFERENCE	AQUATIC SITE 14	1		Barium	142.00	mg/kg	C	126.412	48.000	5374.906
ViewA	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17H17	8/25/2003	Grab	Columbia River	100 B/C AREA UR	1		Barium	643.00	mg/kg	X	126.412	48.000	5374.906
ViewA	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HB2	8/25/2003	Grab	Columbia River	100 B/C AREA UR	1		Barium	696.00	mg/kg	X	126.412	48.000	5374.906
ViewA	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17XN6	11/17/2003	Grab	Columbia River	100 B/C AREA UR	1		Barium	670.00	mg/kg		126.412	48.000	5374.906
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3N3	8/3/1999		Columbia River	PRD-YAKIMA SIDE NEAR DAM	1		Chromium	84.30	mg/kg		42.065	260.000	30.000
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3D6	8/3/1999		Columbia River	PRD-GRANT COUNTY	1		Chromium	51.80	mg/kg		42.065	260.000	30.000
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3F0	8/3/1999		Columbia River	PRD-2/3 GRANT SHORE	1		Chromium	79.90	mg/kg		42.065	260.000	30.000
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3F2	8/3/1999		Columbia River	PRD-YAKIMA CNTY SHOR	1		Chromium	72.20	mg/kg		42.065	260.000	30.000
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3N5	8/3/1999		Columbia River	PRD-GRANT SIDE NEAR DAM	1		Chromium	80.00	mg/kg		42.065	260.000	30.000
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CL9	7/19/2001	Grab	Columbia River	PRD-YAKIMA SIDE NEAR DAM	1		Chromium	80.10	mg/kg		42.065	260.000	30.000
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CM1	7/19/2001	Grab	Columbia River	PRD-GRANT SIDE NEAR DAM	1		Chromium	93.00	mg/kg		42.065	260.000	30.000
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RY7	8/28/2001	Grab	Columbia River	VERNITA BRIDGE -1	1		Chromium	66.20	mg/kg		42.065	260.000	30.000
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14YN0	7/23/2002	Grab	Columbia River	PRD-YAKIMA SIDE NEAR DAM	1		Chromium	80.20	mg/kg		42.065	260.000	30.000
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14YN2	7/23/2002	Grab	Columbia River	PRD-GRANT SIDE NEAR DAM	1		Chromium	87.80	mg/kg		42.065	260.000	30.000
ViewA	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17704	7/14/2003	Grab	Columbia River	PRD-GRANT SIDE NEAR DAM	1		Chromium	86.90	mg/kg	CX	42.065	260.000	30.000
ViewA	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17H17	8/25/2003	Grab	Columbia River	100 B/C AREA UR	1		Chromium	56.00	mg/kg	CX	42.065	260.000	30.000
ViewA	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HB2	8/25/2003	Grab	Columbia River	100 B/C AREA UR	1		Chromium	73.40	mg/kg	CX	42.065	260.000	30.000
ViewA	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17XN6	11/17/2003	Grab	Columbia River	100 B/C AREA UR	1		Chromium	103.00	mg/kg	C	42.065	260.000	30.000
ViewA	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17702	7/14/2003	Grab	Columbia River	Above Priest Rapids Dam - Yakima County Shore	1		Chromium	92.10	mg/kg		42.065	260.000	30.000

Table D-2. Metals Data in Sediment Supporting Map Package #1 (26 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewA	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17704	7/14/2003	Grab	Columbia River	Above Priest Rapids Dam - Grant County Shore	1		Chromium	86.90	mg/kg	C	42.065	260.000	30.000
ViewA	An Evaluation of Water Quality and Limnology for the Priest Rapids Project Area	8/1/2000	GOO-3A	10/1/1999	Grab	Columbia River	RM 398.5 - Goose Island	2	RM 398.5	Chromium	57.00	mg/kg		42.065	260.000	30.000
ViewA	An Evaluation of Water Quality and Limnology for the Priest Rapids Project Area	8/1/2000	GOO-1	10/1/1999	Grab	Columbia River	RM 398.5 - Goose Island	2	RM 398.5	Chromium	57.00	mg/kg		42.065	260.000	30.000
ViewA	An Evaluation of Water Quality and Limnology for the Priest Rapids Project Area	8/1/2000	GOO-2	10/1/1999	Grab	Columbia River	RM 398.5 - Goose Island	2	RM 398.5	Chromium	53.00	mg/kg		42.065	260.000	30.000
ViewA	An Evaluation of Water Quality and Limnology for the Priest Rapids Project Area	8/1/2000	GOO-3B	10/1/1999	Grab	Columbia River	RM 398.5 - Goose Island	2	RM 398.5	Chromium	55.00	mg/kg		42.065	260.000	30.000
ViewA	An Evaluation of Water Quality and Limnology for the Priest Rapids Project Area	8/1/2000	GOO-3C	10/1/1999	Grab	Columbia River	RM 398.5 - Goose Island	2	RM 398.5	Chromium	61.00	mg/kg		42.065	260.000	30.000
ViewA	An Evaluation of Water Quality and Limnology for the Priest Rapids Project Area	8/1/2000	GOO-4	10/1/1999	Grab	Columbia River	RM 398.5 - Goose Island	2	RM 398.5	Chromium	56.00	mg/kg		42.065	260.000	30.000
ViewA	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B19PK9	7/12/2004		Columbia River	PRD-YAKIMA SIDE NEAR DAM	1		Chromium	82.80	mg/kg	CX	42.065	260.000	30.000
ViewA	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B19PL1	7/12/2004		Columbia River	PRD-GRANT SIDE NEAR DAM	1		Chromium	90.20	mg/kg	CX	42.065	260.000	30.000
ViewA	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1D0C4	8/8/2005		Columbia River	PRD-YAKIMA SIDE NEAR DAM	1		Chromium	79.00	mg/kg	X	42.065	260.000	30.000
ViewA	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1D0C6	8/8/2005		Columbia River	PRD-GRANT SIDE NEAR DAM	1		Chromium	72.00	mg/kg	X	42.065	260.000	30.000
ViewA	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4434247	6/1/2004	Grab	Columbia River	RM 391 - Irrigation Returns (Mattawa Drain) Left Bank	1	Eckman (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewA	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4444203	6/1/2004	Grab	Columbia River	Above Priest Rapids Dam	1	Petite Ponar (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewA	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4444204	6/1/2004	Grab	Columbia River	Above Priest Rapids Dam	1	Petite Ponar (Comp.)	Selenium	4.90	mg/kg	U	0.375	1.000	390.000
ViewA	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4444205	6/1/2004	Grab	Columbia River	Above Priest Rapids Dam	1	Petite Ponar (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000

Table D-2. Metals Data in Sediment Supporting Map Package #1 (26 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewA	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4444206	6/1/2004	Grab	Columbia River	Above Priest Rapids Dam	1	Petite Ponar (Comp.)	Selenium	4.90	mg/kg	U	0.375	1.000	390.000
ViewA	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B19PK9	7/12/2004		Columbia River	PRD-YAKIMA SIDE NEAR DAM	1		Selenium	1.40	mg/kg	X	0.375	1.000	390.000
ViewA	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B19PL1	7/12/2004		Columbia River	PRD-GRANT SIDE NEAR DAM	1		Selenium	1.92	mg/kg	X	0.375	1.000	390.000
ViewA	100/300 Areas RCBRA	6/11/2007	J116M0	2/9/2006	Grab	RCBRA REFERENCE	AQUATIC SITE 14	1		Vanadium	58.90	mg/kg	NA	32.414	57.000	78.214
ViewB1	100 Area Columbia River Sediment Sampling	1/1/1993	B07ND1	11/20/1992	Grab	Columbia River	Hanford Reach - 100-B/C Area	1	TMA	Antimony	4.70	mg/kg	UJN	0.972	3.000	31.000
ViewB1	100 Area Columbia River Sediment Sampling	1/1/1993	B07ND9	11/20/1992	Grab	Columbia River	Hanford Reach - 100-B/C Area	1	TMA	Antimony	3.80	mg/kg	UJN	0.972	3.000	31.000
ViewB1	100 Area Columbia River Sediment Sampling	1/1/1993	B07NF9	11/21/1992	Grab	Columbia River	Hanford Reach - 100-K Area	1	TMA	Antimony	4.90	mg/kg	UJN	0.972	3.000	31.000
ViewB1	100 Area Columbia River Sediment Sampling	1/1/1993	B07NG0	11/21/1992	Grab	Columbia River	Hanford Reach - 100-K Area	1	TMA	Antimony	5.10	mg/kg	UJN	0.972	3.000	31.000
ViewB1	100 Area Columbia River Sediment Sampling	1/1/1993	B07NG1	11/21/1992	Grab	Columbia River	Hanford Reach - 100-K Area	1	TMA	Antimony	4.80	mg/kg	UJN	0.972	3.000	31.000
ViewB1	100 Area Columbia River Sediment Sampling	1/1/1993	B07NG2	11/21/1992	Grab	Columbia River	Hanford Reach - 100-K Area	1	TMA	Antimony	3.70	mg/kg	UN	0.972	3.000	31.000
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17H23	8/25/2003	Grab	Columbia River	100 B/C AREA DR	1		Arsenic	8.67	mg/kg	X	6.383	57.000	0.390
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HB8	8/25/2003	Grab	Columbia River	100 B/C AREA DR	1		Arsenic	6.62	mg/kg	X	6.383	57.000	0.390
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17XN9	11/13/2003	Grab	Columbia River	100-B SPRING 38-3	1		Arsenic	6.87	mg/kg	C	6.383	57.000	0.390
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17H18	8/25/2003	Grab	Columbia River	100-B SPRING 38-3	1		Barium	624.00	mg/kg	X	126.412	48.000	5374.906
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17H19	8/25/2003	Grab	Columbia River	100-B SPRING 39-2	1		Barium	677.00	mg/kg	X	126.412	48.000	5374.906
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17H20	8/25/2003	Grab	Columbia River	100 B/C AREA OUTFL1	1		Barium	667.00	mg/kg	X	126.412	48.000	5374.906
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17H21	8/25/2003	Grab	Columbia River	100 B/C AREA OUTFL2	1		Barium	677.00	mg/kg	X	126.412	48.000	5374.906
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17H22	8/25/2003	Grab	Columbia River	100 B/C AREA OUTFL3	1		Barium	884.00	mg/kg	X	126.412	48.000	5374.906
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17H23	8/25/2003	Grab	Columbia River	100 B/C AREA DR	1		Barium	717.00	mg/kg	X	126.412	48.000	5374.906
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HB3	8/25/2003	Grab	Columbia River	100-B SPRING 38-3	1		Barium	655.00	mg/kg	X	126.412	48.000	5374.906

Table D-2. Metals Data in Sediment Supporting Map Package #1 (26 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HB4	8/25/2003	Grab	Columbia River	100-B SPRING 39-2	1		Barium	674.00	mg/kg	X	126.412	48.000	5374.906
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HB5	8/25/2003	Grab	Columbia River	100 B/C AREA OUTFL1	1		Barium	708.00	mg/kg	X	126.412	48.000	5374.906
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HB6	8/25/2003	Grab	Columbia River	100 B/C AREA OUTFL2	1		Barium	725.00	mg/kg	X	126.412	48.000	5374.906
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HB7	8/25/2003	Grab	Columbia River	100 B/C AREA OUTFL3	1		Barium	1027.00	mg/kg	X	126.412	48.000	5374.906
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HB8	8/25/2003	Grab	Columbia River	100 B/C AREA DR	1		Barium	802.00	mg/kg	X	126.412	48.000	5374.906
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HT9	8/27/2003	Grab	Columbia River	100 B/C AREA UR	1		Barium	759.00	mg/kg	X	126.412	48.000	5374.906
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17XN8	11/13/2003	Grab	Columbia River	100-B SPRING 37-1	1		Barium	766.00	mg/kg		126.412	48.000	5374.906
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17XN9	11/13/2003	Grab	Columbia River	100-B SPRING 38-3	1		Barium	869.00	mg/kg		126.412	48.000	5374.906
ViewB1	100 Area Columbia River Sediment Sampling	1/1/1993	B07ND1	11/20/1992	Grab	Columbia River	Hanford Reach - 100-B/C Area	1	TMA	Chromium	47.60	mg/kg		42.065	260.000	30.000
ViewB1	100 Area Columbia River Sediment Sampling	1/1/1993	B07ND9	11/20/1992	Grab	Columbia River	Hanford Reach - 100-B/C Area	1	TMA	Chromium	50.60	mg/kg		42.065	260.000	30.000
ViewB1	100 Area Columbia River Sediment Sampling	1/1/1993	B07NF9	11/21/1992	Grab	Columbia River	Hanford Reach - 100-K Area	1	TMA	Chromium	64.10	mg/kg		42.065	260.000	30.000
ViewB1	Citizens Monitoring and Technical Assessment - Analysis of Chemical Contaminants in Hanford Reach Biota and Environmental Materials at the Perimeter of the Hanford Nuclear Reservation and on the Columbia River	6/1/2005	HR004W	10/7/2003	Grab	Columbia River	B/C Reactor Area - Downstream of Intake Structure	1		Chromium	86.00	mg/kg		42.065	260.000	30.000
ViewB1	Hanford Site Environmental Report for Calendar Year 1995	1/1/1996	B0G0X3	8/28/1995	Grab	Columbia River	100-B SPRING	1	coordinates estimated	Chromium	43.00	mg/kg		42.065	260.000	30.000
ViewB1	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WDP5	10/25/1999		Columbia River	100-B SPRING 38-3	1		Chromium	61.70	mg/kg		42.065	260.000	30.000
ViewB1	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12X22	10/22/2001	Grab	Columbia River	100-B SPRING 38-3	1		Chromium	85.60	mg/kg		42.065	260.000	30.000
ViewB1	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C41	9/16/2002	Grab	Columbia River	100-B SPRING 37-1	1		Chromium	115.00	mg/kg		42.065	260.000	30.000
ViewB1	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C51	9/16/2002	Grab	Columbia River	100-K SPRING 63-2	1		Chromium	130.00	mg/kg		42.065	260.000	30.000
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17H18	8/25/2003	Grab	Columbia River	100-B SPRING 38-3	1		Chromium	77.80	mg/kg	CX	42.065	260.000	30.000
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17H19	8/25/2003	Grab	Columbia River	100-B SPRING 39-2	1		Chromium	90.80	mg/kg	CX	42.065	260.000	30.000

Table D-2. Metals Data in Sediment Supporting Map Package #1 (26 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17H20	8/25/2003	Grab	Columbia River	100 B/C AREA OUTFL1	1		Chromium	49.50	mg/kg	CX	42.065	260.000	30.000
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17H21	8/25/2003	Grab	Columbia River	100 B/C AREA OUTFL2	1		Chromium	80.50	mg/kg	CX	42.065	260.000	30.000
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17H23	8/25/2003	Grab	Columbia River	100 B/C AREA DR	1		Chromium	73.70	mg/kg	CX	42.065	260.000	30.000
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HB3	8/25/2003	Grab	Columbia River	100-B SPRING 38-3	1		Chromium	67.30	mg/kg	CX	42.065	260.000	30.000
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HB4	8/25/2003	Grab	Columbia River	100-B SPRING 39-2	1		Chromium	63.20	mg/kg	CX	42.065	260.000	30.000
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HB5	8/25/2003	Grab	Columbia River	100 B/C AREA OUTFL1	1		Chromium	101.00	mg/kg	CX	42.065	260.000	30.000
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HB6	8/25/2003	Grab	Columbia River	100 B/C AREA OUTFL2	1		Chromium	55.10	mg/kg	CX	42.065	260.000	30.000
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HB7	8/25/2003	Grab	Columbia River	100 B/C AREA OUTFL3	1		Chromium	63.90	mg/kg	CX	42.065	260.000	30.000
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HB8	8/25/2003	Grab	Columbia River	100 B/C AREA DR	1		Chromium	78.40	mg/kg	CX	42.065	260.000	30.000
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HT9	8/27/2003	Grab	Columbia River	100 B/C AREA UR	1		Chromium	47.50	mg/kg	CX	42.065	260.000	30.000
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17J53	10/20/2003	Grab	Columbia River	100-B SPRING 37-1	1		Chromium	112.00	mg/kg	C	42.065	260.000	30.000
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17J64	10/20/2003	Grab	Columbia River	100-K SPRING 63-1	1		Chromium	110.00	mg/kg	C	42.065	260.000	30.000
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17XN8	11/13/2003	Grab	Columbia River	100-B SPRING 37-1	1		Chromium	96.30	mg/kg	C	42.065	260.000	30.000
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17XN9	11/13/2003	Grab	Columbia River	100-B SPRING 38-3	1		Chromium	68.40	mg/kg	C	42.065	260.000	30.000
ViewB1	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFP7	10/11/2004		Columbiia River	100-B SPRING 37-1	1		Chromium	81.60	mg/kg	X	42.065	260.000	30.000
ViewB1	100 Area Columbia River Sediment Sampling	1/1/1993	B07NF9	11/21/1992	Grab	Columbia River	Hanford Reach - 100-K Area	1	TMA	Selenium	1.10	mg/kg	UJW	0.375	1.000	390.000
ViewB1	100 Area Columbia River Sediment Sampling	1/1/1993	B07NG0	11/21/1992	Grab	Columbia River	Hanford Reach - 100-K Area	1	TMA	Selenium	1.10	mg/kg	U	0.375	1.000	390.000
ViewB1	100/300 Areas RCBRA	6/11/2007	J11298	2/21/2006	Grab	100 K	CHROMIUM SITE 1	1		Selenium	3.90	mg/kg	U	0.375	1.000	390.000
ViewB1	100/300 Areas RCBRA	6/11/2007	J11299	2/21/2006	Grab	100 K	CHROMIUM SITE 2	1		Selenium	3.80	mg/kg	U	0.375	1.000	390.000
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17J53	10/20/2003	Grab	Columbia River	100-B SPRING 37-1	1		Selenium	1.63	mg/kg		0.375	1.000	390.000
ViewB2	100 Area Columbia River Sediment Sampling	1/1/1993	B07NC9	11/17/1992	Grab	Columbia River	Hanford Reach - Horn Area	1	TMA	Antimony	3.60	mg/kg	UJN	0.972	3.000	31.000

Table D-2. Metals Data in Sediment Supporting Map Package #1 (26 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB2	100 Area Columbia River Sediment Sampling	1/1/1993	B07ND0	11/17/1992	Grab	Columbia River	Hanford Reach - Horn Area	1	TMA	Antimony	6.80	mg/kg	BJN	0.972	3.000	31.000
ViewB2	100 Area Columbia River Sediment Sampling	1/1/1993	B07ND4	11/19/1992	Grab	Columbia River	Hanford Reach - D Island	1	TMA	Antimony	4.10	mg/kg	UJN	0.972	3.000	31.000
ViewB2	100 Area Columbia River Sediment Sampling	1/1/1993	B07ND5	11/19/1992	Grab	Columbia River	Hanford Reach - D Island	1	TMA	Antimony	4.00	mg/kg	UJN	0.972	3.000	31.000
ViewB2	100 Area Columbia River Sediment Sampling	1/1/1993	B07ND6	11/19/1992	Grab	Columbia River	Hanford Reach - D Island	1	TMA	Antimony	3.30	mg/kg	UJN	0.972	3.000	31.000
ViewB2	100 Area Columbia River Sediment Sampling	1/1/1993	B07ND7	11/19/1992	Grab	Columbia River	Hanford Reach - D Island	1	TMA	Antimony	4.20	mg/kg	UJN	0.972	3.000	31.000
ViewB2	100 Area Columbia River Sediment Sampling	1/1/1993	B07NF1	11/19/1992	Grab	Columbia River	Hanford Reach - 100- D Area	1	TMA	Antimony	3.80	mg/kg	UJN	0.972	3.000	31.000
ViewB2	100 Area Columbia River Sediment Sampling	1/1/1993	B07ND8	11/19/1992	Grab	Columbia River	Hanford Reach - D Island	1	TMA	Antimony	3.40	mg/kg	UJN	0.972	3.000	31.000
ViewB2	100 Area Columbia River Sediment Sampling	1/1/1993	B07NF0	11/19/1992	Grab	Columbia River	Hanford Reach - Horn Area	1	TMA	Antimony	7.50	mg/kg	UJN	0.972	3.000	31.000
ViewB2	100 Area Columbia River Sediment Sampling	1/1/1993	B07NF2	11/19/1992	Grab	Columbia River	Hanford Reach - 100- D Area	1	TMA	Antimony	4.30	mg/kg	UJN	0.972	3.000	31.000
ViewB2	100 Area Columbia River Sediment Sampling	1/1/1993	B07NH1	11/23/1992	Grab	Columbia River	Hanford Reach - Horn Area	1	TMA	Antimony	4.20	mg/kg	UJN	0.972	3.000	31.000
ViewB2	100 Area Columbia River Sediment Sampling	1/1/1993	B07NH2	11/23/1992	Grab	Columbia River	Hanford Reach - Horn Area	1	TMA	Antimony	4.70	mg/kg	JN	0.972	3.000	31.000
ViewB2	100 Area Columbia River Sediment Sampling	1/1/1993	B07NH5	11/24/1992	Grab	Columbia River	Hanford Reach - D Island	1	TMA	Antimony	3.90	mg/kg	UJN	0.972	3.000	31.000
ViewB2	100 Area Columbia River Sediment Sampling	1/1/1993	B07NH6	11/24/1992	Grab	Columbia River	Hanford Reach - D Island	1	TMA	Antimony	4.20	mg/kg	UJN	0.972	3.000	31.000
ViewB2	100 Area Columbia River Sediment Sampling	1/1/1993	B07NH7	11/24/1992	Grab	Columbia River	Hanford Reach - D Island	1	WESTON	Antimony	14.70	mg/kg	U	0.972	3.000	31.000
ViewB2	100/300 Areas RCBRA	6/11/2007	J116W5	2/27/2006	Grab	100 N	STRONTIUM SITE 6	1		Arsenic	8.70	mg/kg	NA	6.383	57.000	0.390
ViewB2	100/300 Areas RCBRA	6/11/2007	J116W5	2/27/2006	Grab	100 N	STRONTIUM SITE 6	1		Barium	157.00	mg/kg	C	126.412	48.000	5374.906
ViewB2	100 Area Columbia River Sediment Sampling	1/1/1993	B07NF1	11/19/1992	Grab	Columbia River	Hanford Reach - 100- D Area	1	TMA	Chromium	47.00	mg/kg		42.065	260.000	30.000
ViewB2	100 Area Columbia River Sediment Sampling	1/1/1993	B07ND0	11/17/1992	Grab	Columbia River	Hanford Reach - Horn Area	1	TMA	Selenium	1.10	mg/kg	UJN	0.375	1.000	390.000
ViewB2	100 Area Columbia River Sediment Sampling	1/1/1993	B07ND4	11/19/1992	Grab	Columbia River	Hanford Reach - D Island	1	TMA	Selenium	3.40	mg/kg	U	0.375	1.000	390.000
ViewB2	100 Area Columbia River Sediment Sampling	1/1/1993	B07NF0	11/19/1992	Grab	Columbia River	Hanford Reach - Horn Area	1	TMA	Selenium	1.20	mg/kg	U	0.375	1.000	390.000
ViewB2	100/300 Areas RCBRA	6/11/2007	J112B0	2/21/2006	Grab	100 K	CHROMIUM SITE 3	1		Selenium	3.70	mg/kg	U	0.375	1.000	390.000

Table D-2. Metals Data in Sediment Supporting Map Package #1 (26 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB2	100/300 Areas RCBRA	6/11/2007	J112B1	2/21/2006	Grab	100 K	CHROMIUM SITE 4	1		Selenium	3.70	mg/kg	U	0.375	1.000	390.000
ViewB2	100/300 Areas RCBRA	6/11/2007	J116L6	2/21/2006	Grab	100 D	CHROMIUM SITE 7	1		Selenium	3.70	mg/kg	U	0.375	1.000	390.000
ViewB2	100/300 Areas RCBRA	6/11/2007	J116L7	2/21/2006	Grab	100 D	CHROMIUM SITE 8	1		Selenium	3.80	mg/kg	U	0.375	1.000	390.000
ViewB2	100/300 Areas RCBRA	6/11/2007	J116W5	2/27/2006	Grab	100 N	STRONTIUM SITE 6	1		Selenium	1.10	mg/kg	U	0.375	1.000	390.000
ViewB2	100/300 Areas RCBRA	6/11/2007	J11733	2/21/2006	Grab	100 D	CHROMIUM SITE 8	1		Selenium	3.70	mg/kg	U	0.375	1.000	390.000
ViewB2	100 Area Columbia River Sediment Sampling	1/1/1993	B07NH2	11/23/1992	Grab	Columbia River	Hanford Reach - Horn Area	1	TMA	Vanadium	86.20	mg/kg		32.414	57.000	78.214
ViewB3	100 Area Columbia River Sediment Sampling	1/1/1993	B07NC2	11/13/1992	Grab	Columbia River	Hanford Reach - 100-H Area	1	TMA	Antimony	4.40	mg/kg	UJN	0.972	3.000	31.000
ViewB3	100 Area Columbia River Sediment Sampling	1/1/1993	B07NC3	11/13/1992	Grab	Columbia River	Hanford Reach - 100-H Area	1	TMA	Antimony	4.90	mg/kg	UJN	0.972	3.000	31.000
ViewB3	100 Area Columbia River Sediment Sampling	1/1/1993	B07NC4	11/16/1992	Grab	Columbia River	Hanford Reach - F Slough	1	TMA	Antimony	4.10	mg/kg	UJN	0.972	3.000	31.000
ViewB3	100 Area Columbia River Sediment Sampling	1/1/1993	B07NC5	11/16/1992	Grab	Columbia River	Hanford Reach - F Slough	1	TMA	Antimony	3.50	mg/kg	UJN	0.972	3.000	31.000
ViewB3	100 Area Columbia River Sediment Sampling	1/1/1993	B07NG7	11/22/1992	Grab	Columbia River	Hanford Reach - 100-H Area	1	WESTON	Antimony	17.80	mg/kg	U	0.972	3.000	31.000
ViewB3	100 Area Columbia River Sediment Sampling	1/1/1993	B07NG3	11/22/1992	Grab	Columbia River	Hanford Reach - 100-H Area	1	TMA	Antimony	4.40	mg/kg	UJN	0.972	3.000	31.000
ViewB3	100 Area Columbia River Sediment Sampling	1/1/1993	B07NG5	11/22/1992	Grab	Columbia River	Hanford Reach - 100-H Area	1	TMA	Antimony	4.00	mg/kg	UJN	0.972	3.000	31.000
ViewB3	100 Area Columbia River Sediment Sampling	1/1/1993	B07NG6	11/22/1992	Grab	Columbia River	Hanford Reach - 100-H Area	1	TMA	Antimony	4.60	mg/kg	UJN	0.972	3.000	31.000
ViewB3	100 Area Columbia River Sediment Sampling	1/1/1993	B07NG9	11/23/1992	Grab	Columbia River	Hanford Reach - RM 367 F Slough	1	TMA	Antimony	4.00	mg/kg	UJN	0.972	3.000	31.000
ViewB3	100 Area Columbia River Sediment Sampling	1/1/1993	B07NH0	11/23/1992	Grab	Columbia River	Hanford Reach - RM 367 F Slough	1	TMA	Antimony	4.20	mg/kg	UJN	0.972	3.000	31.000
ViewB3	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3F4	8/9/1999		Columbia River	WHITE BLUFFS SLOUGH	1		Arsenic	7.14	mg/kg		6.383	57.000	0.390
ViewB3	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3F6	8/9/1999		Columbia River	100 F SLOUGH	1		Arsenic	6.59	mg/kg		6.383	57.000	0.390
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YWC2	8/7/2000	Grab	Columbia River		1		Arsenic	7.34	mg/kg		6.383	57.000	0.390
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YWC4	8/7/2000	Grab	Columbia River		1		Arsenic	8.21	mg/kg		6.383	57.000	0.390
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YWD0	8/8/2000	Grab	Columbia River		1		Arsenic	7.58	mg/kg		6.383	57.000	0.390

Table D-2. Metals Data in Sediment Supporting Map Package #1 (26 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB3	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14YL7	7/23/2002	Grab	Columbia River	WHITE BLUFFS SLOUGH	1		Arsenic	15.10	mg/kg		6.383	57.000	0.390
ViewB3	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B176X9	7/14/2003	Grab	Columbia River	WHITE BLUFFS SLOUGH	1	coordinates estimated	Arsenic	8.29	mg/kg		6.383	57.000	0.390
ViewB3	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17JB1	10/27/2003	Grab	Columbia River	100-H SPRING 145-1	1	COLLECTED 20 METERS DOWN RIVER FROM SEEP.	Arsenic	9.63	mg/kg	C	6.383	57.000	0.390
ViewB3	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B19PJ6	7/12/2004		Columbia River	WHITE BLUFFS SLOUGH	1		Arsenic	8.09	mg/kg	X	6.383	57.000	0.390
ViewB3	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BH03	10/26/2004		Columbiia River	100-H SPRING 145-1	1		Arsenic	7.36	mg/kg	X	6.383	57.000	0.390
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1D0B1	8/8/2005		Columbia River	WHITE BLUFFS SLOUGH	1		Arsenic	6.44	mg/kg	X	6.383	57.000	0.390
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F5N6	11/14/2005		Columbiia River	100-H SPRING 145-1	1		Arsenic	8.02	mg/kg	X	6.383	57.000	0.390
ViewB3	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3F4	8/9/1999		Columbia River	WHITE BLUFFS SLOUGH	1		Chromium	51.60	mg/kg		42.065	260.000	30.000
ViewB3	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3F6	8/9/1999		Columbia River	100 F SLOUGH	1		Chromium	75.00	mg/kg		42.065	260.000	30.000
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YWC2	8/7/2000	Grab	Columbia River		1		Chromium	84.30	mg/kg		42.065	260.000	30.000
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YWC4	8/7/2000	Grab	Columbia River		1		Chromium	79.20	mg/kg		42.065	260.000	30.000
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YWD0	8/8/2000	Grab	Columbia River		1		Chromium	55.90	mg/kg		42.065	260.000	30.000
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YWD2	8/8/2000	Grab	Columbia River		1		Chromium	57.20	mg/kg		42.065	260.000	30.000
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10916	11/20/2000	Grab	Columbia River		1		Chromium	82.90	mg/kg		42.065	260.000	30.000
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10931	11/20/2000	Grab	Columbia River		1		Chromium	71.80	mg/kg		42.065	260.000	30.000
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CJ7	7/19/2001	Grab	Columbia River	100 F SLOUGH	1		Chromium	76.10	mg/kg		42.065	260.000	30.000
ViewB3	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14YL7	7/23/2002	Grab	Columbia River	WHITE BLUFFS SLOUGH	1		Chromium	72.00	mg/kg		42.065	260.000	30.000
ViewB3	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B176X9	7/14/2003	Grab	Columbia River	WHITE BLUFFS SLOUGH	1	coordinates estimated	Chromium	79.10	mg/kg	C	42.065	260.000	30.000
ViewB3	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17JB1	10/27/2003	Grab	Columbia River	100-H SPRING 145-1	1	COLLECTED 20 METERS DOWN RIVER FROM SEEP.	Chromium	53.20	mg/kg	C	42.065	260.000	30.000
ViewB3	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B19PJ6	7/12/2004		Columbia River	WHITE BLUFFS SLOUGH	1		Chromium	63.10	mg/kg	CX	42.065	260.000	30.000

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB3	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BH03	10/26/2004		Columbiia River	100-H SPRING 145-1	1		Chromium	62.70	mg/kg	X	42.065	260.000	30.000
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1D0B1	8/8/2005		Columbia River	WHITE BLUFFS SLOUGH	1		Chromium	50.50	mg/kg	X	42.065	260.000	30.000
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1D0B3	8/8/2005		Columbia River	100 F SLOUGH	1		Chromium	43.40	mg/kg	X	42.065	260.000	30.000
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F5N6	11/14/2005		Columbiia River	100-H SPRING 145-1	1		Chromium	68.60	mg/kg	X	42.065	260.000	30.000
ViewB3	100 Area Columbia River Sediment Sampling	1/1/1993	B07NC3	11/13/1992	Grab	Columbia River	Hanford Reach - 100-H Area	1	TMA	Selenium	1.10	mg/kg	B	0.375	1.000	390.000
ViewB3	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14YL7	7/23/2002	Grab	Columbia River	WHITE BLUFFS SLOUGH	1		Selenium	2.17	mg/kg		0.375	1.000	390.000
ViewB3	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4434246	6/1/2004	Grab	Columbia River	RM 370 - Irrigation Returns (Wahluke Branch 10 Wasteway)	1	Steel Spoon (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewB3	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B19PJ6	7/12/2004		Columbia River	WHITE BLUFFS SLOUGH	1		Selenium	1.14	mg/kg	X	0.375	1.000	390.000
ViewB3	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B19PJ8	7/12/2004		Columbia River	100 F SLOUGH	1		Selenium	1.21	mg/kg	X	0.375	1.000	390.000
ViewB4	100 Area Columbia River Sediment Sampling	1/1/1993	B07NB6	11/12/1992	Grab	Columbia River	Hanford Reach - F Slough	1	TMA	Antimony	4.50	mg/kg	UJN	0.972	3.000	31.000
ViewB4	100 Area Columbia River Sediment Sampling	1/1/1993	B07NB7	11/12/1992	Grab	Columbia River	Hanford Reach - F Slough	1	TMA	Antimony	4.70	mg/kg	UJN	0.972	3.000	31.000
ViewB4	100 Area Columbia River Sediment Sampling	1/1/1993	B07NB8	11/12/1992	Grab	Columbia River	Hanford Reach - F Slough	1	TMA	Antimony	4.30	mg/kg	UJN	0.972	3.000	31.000
ViewB4	100 Area Columbia River Sediment Sampling	1/1/1993	B07NB9	11/12/1992	Grab	Columbia River	Hanford Reach - F Slough	1	TMA	Antimony	4.00	mg/kg	UJN	0.972	3.000	31.000
ViewB4	100 Area Columbia River Sediment Sampling	1/1/1993	B07NC6	11/16/1992	Grab	Columbia River	Hanford Reach - Hanford Townsite	1	TMA	Antimony	3.70	mg/kg	BJN	0.972	3.000	31.000
ViewB4	100 Area Columbia River Sediment Sampling	1/1/1993	B07NC7	11/16/1992	Grab	Columbia River	Hanford Reach - Hanford Townsite	1	TMA	Antimony	3.40	mg/kg	UJN	0.972	3.000	31.000
ViewB4	100 Area Columbia River Sediment Sampling	1/1/1993	B07ND2	11/17/1992	Grab	Columbia River	Hanford Reach - Hanford Townsite	1	TMA	Antimony	3.80	mg/kg	UJN	0.972	3.000	31.000
ViewB4	100 Area Columbia River Sediment Sampling	1/1/1993	B07ND3	11/17/1992	Grab	Columbia River	Hanford Reach - Hanford Townsite	1	TMA	Antimony	3.60	mg/kg	UJN	0.972	3.000	31.000
ViewB4	100 Area Columbia River Sediment Sampling	1/1/1993	B07NH3	11/23/1992	Grab	Columbia River	Hanford Reach - Hanford Townsite	1	TMA	Antimony	4.10	mg/kg	UJN	0.972	3.000	31.000
ViewB4	100 Area Columbia River Sediment Sampling	1/1/1993	B07NH4	11/23/1992	Grab	Columbia River	Hanford Reach - Hanford Townsite	1	TMA	Antimony	4.20	mg/kg	UJN	0.972	3.000	31.000
ViewB4	Hanford Site Environmental Report for Calendar Year 1996	1/1/1997	B0G184	8/20/1996	Grab	Columbia River	F Slough	1		Antimony	5.90	mg/kg	L	0.972	3.000	31.000

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB4	100 Area Columbia River Sediment Sampling	1/1/1993	B07NB6	11/12/1992	Grab	Columbia River	Hanford Reach - F Slough	1	TMA	Arsenic	7.40	mg/kg		6.383	57.000	0.390
ViewB4	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YY65	8/15/2000	Grab	Columbia River	White Bluffs Slough	1	coordinates estimated	Arsenic	6.98	mg/kg		6.383	57.000	0.390
ViewB4	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14YM1	7/23/2002	Grab	Columbia River	HANFORD SLOUGH	1		Arsenic	6.48	mg/kg		6.383	57.000	0.390
ViewB4	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C54	10/29/2002	Grab	Columbia River	100-F SPRING 207-1	1		Arsenic	6.39	mg/kg		6.383	57.000	0.390
ViewB4	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B176Y3	7/14/2003	Grab	Columbia River	HANFORD SLOUGH	1		Arsenic	8.69	mg/kg		6.383	57.000	0.390
ViewB4	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17J67	11/3/2003	Grab	Columbia River	100-F SPRING 207-1	1		Arsenic	7.75	mg/kg	C	6.383	57.000	0.390
ViewB4	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4434239	6/1/2004	Grab	Columbia River	RM 362 - Hanford Slough Right Bank	1	Van Veen (Comp.)	Arsenic	6.80	mg/kg		6.383	57.000	0.390
ViewB4	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4434245	6/1/2004	Grab	Columbia River	RM 366 - F Slough Right Bank	1	Steel Spoon (Comp.)	Arsenic	20.00	mg/kg		6.383	57.000	0.390
ViewB4	Reconnaissance Investigation of Water Quality, Bottom Sediment, and Biota Associated with Irrigation Drainage in the Columbia Basin Project, Washington, 1991-92	1/1/1995	PEW-1sed	7/16/1992	Grab	Columbia River	RM 354.4 - Irrigation Returns (PE 16.4 Wasteway (Spoils Bank))	2	This is a sediment sample.	Barium	710.00	mg/kg		126.412	48.000	5374.906
ViewB4	100 Area Columbia River Sediment Sampling	1/1/1993	B07NB9	11/12/1992	Grab	Columbia River	Hanford Reach - F Slough	1	TMA	Chromium	45.70	mg/kg		42.065	260.000	30.000
ViewB4	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3F8	8/9/1999		Columbia River	HANFORD SLOUGH	1		Chromium	59.20	mg/kg		42.065	260.000	30.000
ViewB4	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WDT0	11/1/1999		Columbia River	100-F SPRING 207-1	1		Chromium	54.30	mg/kg		42.065	260.000	30.000
ViewB4	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YY65	8/15/2000	Grab	Columbia River	White Bluffs Slough	1	coordinates estimated	Chromium	58.50	mg/kg		42.065	260.000	30.000
ViewB4	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YY69	8/15/2000	Grab	Columbia River	Hanford Slough	1	coordinates estimated	Chromium	59.50	mg/kg		42.065	260.000	30.000
ViewB4	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CJ9	7/19/2001	Grab	Columbia River	HANFORD SLOUGH	1		Chromium	64.50	mg/kg		42.065	260.000	30.000
ViewB4	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12X37	10/22/2001	Grab	Columbia River	100-F SPRING 207-1	1		Chromium	87.60	mg/kg		42.065	260.000	30.000
ViewB4	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14YM1	7/23/2002	Grab	Columbia River	HANFORD SLOUGH	1		Chromium	64.60	mg/kg		42.065	260.000	30.000
ViewB4	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C54	10/29/2002	Grab	Columbia River	100-F SPRING 207-1	1		Chromium	62.20	mg/kg	C	42.065	260.000	30.000

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB4	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B176Y1	7/14/2003	Grab	Columbia River	F Slough	1	coordinates estimated	Chromium	55.30	mg/kg	C	42.065	260.000	30.000
ViewB4	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B176Y3	7/14/2003	Grab	Columbia River	HANFORD SLOUGH	1		Chromium	82.70	mg/kg	C	42.065	260.000	30.000
ViewB4	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17J67	11/3/2003	Grab	Columbia River	100-F SPRING 207-1	1		Chromium	74.10	mg/kg	C	42.065	260.000	30.000
ViewB4	Reconnaissance Investigation of Water Quality, Bottom Sediment, and Biota Associated with Irrigation Drainage in the Columbia Basin Project, Washington, 1991-92	1/1/1995	PEW-1sed	7/16/1992	Grab	Columbia River	RM 354.4 - Irrigation Returns (PE 16.4 Wasteway (Spoils Bank))	2	This is a sediment sample.	Chromium	46.00	mg/kg		42.065	260.000	30.000
ViewB4	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B19PK0	7/12/2004		Columbia River	HANFORD SLOUGH	1		Chromium	59.30	mg/kg	CX	42.065	260.000	30.000
ViewB4	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFT0	10/26/2004		Columbia River	100-F SPRING 207-1	1		Chromium	62.20	mg/kg	X	42.065	260.000	30.000
ViewB4	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1D0B5	8/8/2005		Columbia River	HANFORD SLOUGH	1		Chromium	83.40	mg/kg	X	42.065	260.000	30.000
ViewB4	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F5J1	11/15/2005		Columbia River	100-F SPRING 207-1	1		Chromium	56.90	mg/kg	X	42.065	260.000	30.000
ViewB4	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CJ9	7/19/2001	Grab	Columbia River	HANFORD SLOUGH	1		Selenium	1.52	mg/kg	B	0.375	1.000	390.000
ViewB4	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4434239	6/1/2004	Grab	Columbia River	RM 362 - Hanford Slough Right Bank	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewB4	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4434245	6/1/2004	Grab	Columbia River	RM 366 - F Slough Right Bank	1	Steel Spoon (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewB4	Hanford Site Environmental Report for Calendar Year 1996	1/1/1997	B0G184	8/20/1996	Grab	Columbia River	F Slough	1		Vanadium	59.00	mg/kg		32.414	57.000	78.214
ViewB4	Reconnaissance Investigation of Water Quality, Bottom Sediment, and Biota Associated with Irrigation Drainage in the Columbia Basin Project, Washington, 1991-92	1/1/1995	PEW-1sed	7/16/1992	Grab	Columbia River	RM 354.4 - Irrigation Returns (PE 16.4 Wasteway (Spoils Bank))	2	This is a sediment sample.	Vanadium	130.00	mg/kg		32.414	57.000	78.214
ViewC	Hanford Site Environmental Report for Calendar Year 1995	1/1/1996	B0G0X5	9/5/1995	Grab	Columbia River	HANFORD SPRING 28-2	1		Antimony	3.50	mg/kg	L	0.972	3.000	31.000
ViewC	Hanford Site Environmental Report for Calendar Year 1996	1/1/1997	B0G1G1	11/21/1996	Grab	Columbia River	300 AREA SPRING 42-2	1		Antimony	10.00	mg/kg		0.972	3.000	31.000
ViewC	100/300 Areas RCBRA	6/11/2007	J11140	2/8/2006	Grab	300 AREA	300-2 REFERENCE	1		Arsenic	7.30	mg/kg	NA	6.383	57.000	0.390
ViewC	100/300 Areas RCBRA	6/11/2007	J11142	2/8/2006	Grab	300 AREA	URANIUM SITE 2	1		Arsenic	18.00	mg/kg	NA	6.383	57.000	0.390

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ViewC	100/300 Areas RCBRA	6/11/2007	J11738	2/19/2006	Grab	300 AREA	URANIUM SITE 9	1		Arsenic	7.50	mg/kg	NA	6.383	57.000	0.390
ViewC	100/300 Areas RCBRA	6/11/2007	J11739	2/19/2006	Grab	300 AREA	URANIUM SITE 10	1		Arsenic	10.20	mg/kg	NA	6.383	57.000	0.390
ViewC	100/300 Areas RCBRA	6/11/2007	J11740	2/19/2006	Grab	300 AREA	300-1 REFERENCE	1		Arsenic	10.20	mg/kg	NA	6.383	57.000	0.390
ViewC	100/300 Areas RCBRA	6/11/2007	J11742	2/13/2006	Grab	300 AREA	URANIUM SITE 3	1		Arsenic	9.40	mg/kg	NA	6.383	57.000	0.390
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WDP9	11/1/1999		Columbia River	HANFORD SPR UR 28-2	1		Arsenic	6.55	mg/kg		6.383	57.000	0.390
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WDR1	11/1/1999		Columbia River	HANFORD SPR DR 28-2	1		Arsenic	9.58	mg/kg		6.383	57.000	0.390
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10921	11/2/2000	Grab	Columbia River	HANFORD SPR DR 28-2	1	coordinates estimated	Arsenic	7.68	mg/kg		6.383	57.000	0.390
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RL7	8/27/2001	Grab	Columbia River	300 AREA SPRING 42-2	1		Arsenic	6.60	mg/kg		6.383	57.000	0.390
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RM5	8/27/2001	Grab	Columbia River	300 AREA SPR DR 42-2	1		Arsenic	7.84	mg/kg		6.383	57.000	0.390
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C46	10/7/2002	Grab	Columbia River	HANFORD SPR DR 28-2	1		Arsenic	9.40	mg/kg		6.383	57.000	0.390
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C48	10/7/2002	Grab	Columbia River	300 AREA SPR DR 42-2	1		Arsenic	6.50	mg/kg		6.383	57.000	0.390
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17J58	11/3/2003	Grab	Columbia River	HANFORD SPR DR 28-2	1		Arsenic	9.20	mg/kg	C	6.383	57.000	0.390
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFP9	10/25/2004		Columbia River	HANFORD SPR UR 28-2	1		Arsenic	10.60	mg/kg	X	6.383	57.000	0.390
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFR2	10/25/2004		Columbia River	HANFORD SPR DR 28-2	1		Arsenic	7.27	mg/kg	X	6.383	57.000	0.390
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F5H3	10/18/2005		Columbia River	HANFORD SPR UR 28-2	1		Arsenic	9.45	mg/kg	X	6.383	57.000	0.390
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F5H6	10/18/2005		Columbia River	HANFORD SPR DR 28-2	1		Arsenic	9.07	mg/kg	X	6.383	57.000	0.390
ViewC	100/300 Areas RCBRA	6/11/2007	J11142	2/8/2006	Grab	300 AREA	URANIUM SITE 2	1		Barium	157.00	mg/kg	NA	126.412	48.000	5374.906
ViewC	100/300 Areas RCBRA	6/11/2007	J11741	2/13/2006	Grab	300 AREA	URANIUM SITE 8	1		Barium	189.00	mg/kg	NA	126.412	48.000	5374.906
ViewC	100/300 Areas RCBRA	6/11/2007	J11742	2/13/2006	Grab	300 AREA	URANIUM SITE 3	1		Barium	209.00	mg/kg	NA	126.412	48.000	5374.906
ViewC	100/300 Areas RCBRA	6/11/2007	J11743	2/13/2006	Grab	300 AREA	URANIUM SITE 5	1		Barium	146.00	mg/kg	NA	126.412	48.000	5374.906
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WDL4	11/1/1999		Columbia River	300 AREA SPRING 42-2	1		Chromium	46.70	mg/kg		42.065	260.000	30.000

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WDP9	11/1/1999		Columbia River	HANFORD SPR UR 28-2	1		Chromium	60.50	mg/kg		42.065	260.000	30.000
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WDR1	11/1/1999		Columbia River	HANFORD SPR DR 28-2	1		Chromium	83.80	mg/kg		42.065	260.000	30.000
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WDR3	11/1/1999		Columbia River	300 AREA SPR DR 42-2	1		Chromium	43.50	mg/kg		42.065	260.000	30.000
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10905	11/2/2000	Grab	Columbia River		1		Chromium	54.10	mg/kg		42.065	260.000	30.000
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10918	11/2/2000	Grab	Columbia River	HANFORD SPR UR 28-2	1	coordinates estimated	Chromium	76.00	mg/kg		42.065	260.000	30.000
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10921	11/2/2000	Grab	Columbia River	HANFORD SPR DR 28-2	1	coordinates estimated	Chromium	77.00	mg/kg		42.065	260.000	30.000
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10923	11/2/2000	Grab	Columbia River		1		Chromium	58.70	mg/kg		42.065	260.000	30.000
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RL7	8/27/2001	Grab	Columbia River	300 AREA SPRING 42-2	1		Chromium	77.90	mg/kg		42.065	260.000	30.000
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RM5	8/27/2001	Grab	Columbia River	300 AREA SPR DR 42-2	1		Chromium	55.00	mg/kg		42.065	260.000	30.000
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C46	10/7/2002	Grab	Columbia River	HANFORD SPR DR 28-2	1		Chromium	74.20	mg/kg		42.065	260.000	30.000
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17J18	10/13/2003	Grab	Columbia River	300 AREA SPRING 42-2	1		Chromium	46.30	mg/kg		42.065	260.000	30.000
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17J58	11/3/2003	Grab	Columbia River	HANFORD SPR DR 28-2	1		Chromium	80.90	mg/kg	C	42.065	260.000	30.000
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17J61	10/13/2003	Grab	Columbia River	300 AREA SPR DR 42-2	1		Chromium	51.00	mg/kg		42.065	260.000	30.000
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFM1	10/25/2004		Columbiia River	300 AREA SPRING 42-2	1		Chromium	50.20	mg/kg	X	42.065	260.000	30.000
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFP9	10/25/2004		Columbia River	HANFORD SPR UR 28-2	1		Chromium	45.20	mg/kg	X	42.065	260.000	30.000
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFR2	10/25/2004		Columbia River	HANFORD SPR DR 28-2	1		Chromium	80.70	mg/kg	X	42.065	260.000	30.000
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFR5	10/25/2004		Columbiia River	300 AREA SPR DR 42-2	1		Chromium	56.40	mg/kg	X	42.065	260.000	30.000
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DWP8	10/6/2005		Columbiia River	300 AREA SPRING 42-2	1		Chromium	54.40	mg/kg	X	42.065	260.000	30.000
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DWR4	10/6/2005		Columbiia River	300 AREA SPR DR 42-2	1		Chromium	66.30	mg/kg	X	42.065	260.000	30.000
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F5H3	10/18/2005		Columbia River	HANFORD SPR UR 28-2	1		Chromium	80.40	mg/kg	X	42.065	260.000	30.000
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F5H6	10/18/2005		Columbia River	HANFORD SPR DR 28-2	1		Chromium	113.00	mg/kg	X	42.065	260.000	30.000

Table D-2. Metals Data in Sediment Supporting Map Package #1 (26 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewC	100/300 Areas RCBRA	6/11/2007	J11737	2/19/2006	Grab	300 AREA	URANIUM SITE 4	1		Selenium	4.30	mg/kg	NA	0.375	1.000	390.000
ViewC	100/300 Areas RCBRA	6/11/2007	J11738	2/19/2006	Grab	300 AREA	URANIUM SITE 9	1		Selenium	4.60	mg/kg	U	0.375	1.000	390.000
ViewC	100/300 Areas RCBRA	6/11/2007	J11739	2/19/2006	Grab	300 AREA	URANIUM SITE 10	1		Selenium	4.00	mg/kg	U	0.375	1.000	390.000
ViewC	100/300 Areas RCBRA	6/11/2007	J11740	2/19/2006	Grab	300 AREA	300-1 REFERENCE	1		Selenium	4.10	mg/kg	U	0.375	1.000	390.000
ViewC	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4434237	6/1/2004	Grab	Columbia River	RM 345 - Irrigation Returns (Potholes Canal Aqueduct)	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewC	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4434238	6/1/2004	Grab	Columbia River	RM 356.5 - Irrigation Returns (Wahluke Branch 5 Wasteway)	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewC	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4444201	6/1/2004	Grab	Columbia River	RM 354.4 - Irrigation Returns (PE 16.4 Wasteway (Spoils Bank))	1	Steel Spoon (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewC	100/300 Areas RCBRA	6/11/2007	J11142	2/8/2006	Grab	300 AREA	URANIUM SITE 2	1		Vanadium	66.00	mg/kg	NA	32.414	57.000	78.214
ViewC	100/300 Areas RCBRA	6/11/2007	J11742	2/13/2006	Grab	300 AREA	URANIUM SITE 3	1		Vanadium	60.60	mg/kg	NA	32.414	57.000	78.214
ViewC	Hanford Site Environmental Report for Calendar Year 1995	1/1/1996	B0G0X5	9/5/1995	Grab	Columbia River	HANFORD SPRING 28-2	1		Vanadium	74.00	mg/kg		32.414	57.000	78.214
ViewD	Hanford Site Environmental Report for Calendar Year 1996	1/1/1997	B0G194	8/20/1996	Grab	Columbia River	Richland, WA	1		Antimony	5.40	mg/kg	L	0.972	3.000	31.000
ViewD	USACE	3/28/2007	MCN 14	9/16/1998				1		Antimony	3.43	mg/kg		0.972	3.000	31.000
ViewD	USACE	3/28/2007	MCN 15	9/16/1998				1		Antimony	3.42	mg/kg		0.972	3.000	31.000
ViewD	USACE	3/28/2007	MCN 18	9/16/1998				1		Antimony	3.01	mg/kg		0.972	3.000	31.000
ViewD	USACE	3/28/2007	MCN 20	9/16/1998				1		Antimony	3.39	mg/kg		0.972	3.000	31.000
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CK1	7/23/2001	Grab	Columbia River	RICHLAND-RIVER	1		Arsenic	7.35	mg/kg		6.383	57.000	0.390
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14YM3	7/19/2002	Grab	Columbia River	RICHLAND-RIVER	1		Arsenic	6.64	mg/kg		6.383	57.000	0.390
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B176Y5	7/16/2003	Grab	Columbia River	Richland, WA	1		Arsenic	8.58	mg/kg		6.383	57.000	0.390
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4414213	6/1/2004	Grab	Columbia River	Lake Wallula (Below Columbia-Snake R. Confluence)	1	Van Veen (Comp.)	Arsenic	7.20	mg/kg		6.383	57.000	0.390

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4424215	6/1/2004	Grab	Columbia River	Lake Wallula (Below Columbia-Snake R. Confluence)	1	Van Veen (Comp.)	Arsenic	7.40	mg/kg		6.383	57.000	0.390
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4434230	6/1/2004	Grab	Yakima River	RM 1 - Lower River (Delta Area)	1	Van Veen (Comp.)	Arsenic	6.70	mg/kg		6.383	57.000	0.390
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B19PK2	7/13/2004		Columbia River	RICHLAND-RIVER	1		Arsenic	6.70	mg/kg	X	6.383	57.000	0.390
ViewD	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1D0B7	8/9/2005		Columbia River	RICHLAND-RIVER	1		Arsenic	10.80	mg/kg	X	6.383	57.000	0.390
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YW85	8/8/2000	Grab	Columbia River	Richland, Washington	1	coordinates estimated	Chromium	48.60	mg/kg		42.065	260.000	30.000
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CK1	7/23/2001	Grab	Columbia River	RICHLAND-RIVER	1		Chromium	52.60	mg/kg		42.065	260.000	30.000
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T08	8/27/2001	Grab	Columbia River	300 SPR 14	1		Chromium	43.20	mg/kg		42.065	260.000	30.000
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14YM3	7/19/2002	Grab	Columbia River	RICHLAND-RIVER	1		Chromium	64.10	mg/kg		42.065	260.000	30.000
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B176Y5	7/16/2003	Grab	Columbia River	Richland, WA	1		Chromium	65.30	mg/kg	C	42.065	260.000	30.000
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B19PK2	7/13/2004		Columbia River	RICHLAND-RIVER	1		Chromium	77.60	mg/kg	CX	42.065	260.000	30.000
ViewD	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1D0B7	8/9/2005		Columbia River	RICHLAND-RIVER	1		Chromium	45.90	mg/kg	X	42.065	260.000	30.000
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4414209	6/1/2004	Grab	Walla Walla River	RM 1 - Lower River (Delta Area)	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4414210	6/1/2004	Grab	Columbia River	RM 316 - Lake Wallula (Below Boise Cascade Outfall)	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4414211	6/1/2004	Grab	Columbia River	RM 316 - Lake Wallula (Below Boise Cascade Outfall)	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4414212	6/1/2004	Grab	Columbia River	RM 316 - Lake Wallula (Below Boise Cascade Outfall)	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4414213	6/1/2004	Grab	Columbia River	Lake Wallula (Below Columbia-Snake R. Confluence)	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4424215	6/1/2004	Grab	Columbia River	Lake Wallula (Below Columbia-Snake R. Confluence)	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4424216	6/1/2004	Grab	Columbia River	Lake Wallula (Below Columbia-Snake R. Confluence)	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4424217	6/1/2004	Grab	Snake River	RM 1 - Lower River (Delta Area)	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4424218	6/1/2004	Grab	Snake River	RM 1 - Lower River (Delta Area)	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4424220	6/1/2004	Grab	Columbia River	Lake Wallula (Above Columbia-Snake R. Confluence)	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4424224	6/1/2004	Grab	Columbia River	Lake Wallula (Above Columbia-Snake R. Confluence)	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4424225	6/1/2004	Grab	Columbia River	Lake Wallula (Above Columbia-Snake R. Confluence)	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4424226	6/1/2004	Grab	Columbia River	Lake Wallula (Above Columbia-Snake R. Confluence)	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4424227	6/1/2004	Grab	Columbia River	Lake Wallula (Above Columbia-Snake R. Confluence)	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4434230	6/1/2004	Grab	Yakima River	RM 1 - Lower River (Delta Area)	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4434231	6/1/2004	Grab	Yakima River	RM 1 - Lower River (Delta Area)	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4434233	6/1/2004	Grab	Yakima River	RM 1 - Lower River (Delta Area)	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4434234	6/1/2004	Grab	Columbia River	RM 339.5 - Lake Wallula (Below Richland STP Outfall)	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4434235	6/1/2004	Grab	Columbia River	Hanford Reach - 300 Area	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4434236	6/1/2004	Grab	Columbia River	RM 343.5 - Irrigation Returns (Esquatzel Diversion Channel)	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4434244	6/1/2004	Grab	Yakima River	RM 1 - Lower River (Delta Area)	1	Petite Ponar (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B19PK2	7/13/2004		Columbia River	RICHLAND-RIVER	1		Selenium	1.46	mg/kg	X	0.375	1.000	390.000
ViewD	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4434241	6/1/2004		Columbia River	Lake Wallula (Below West Richland STP)	1	Petite Ponar - Composite	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD-Snake	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3C8	8/16/1999		Snake River	ICE HARBOR-MID RIVER	1		Arsenic	8.62	mg/kg		6.383	57.000	0.390
ViewD-Snake	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3D0	8/16/1999		Snake River	ICE HARBOR-WALLA WALLA SHORE	1		Arsenic	8.22	mg/kg		6.383	57.000	0.390
ViewD-Snake	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CH5	7/23/2001	Grab	Snake River	ICE HARBOR-FRANKLIN SHORE	1		Arsenic	7.43	mg/kg		6.383	57.000	0.390
ViewD-Snake	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CH7	7/23/2001	Grab	Snake River	ICE HARBOR-MID RIVER	1		Arsenic	8.16	mg/kg		6.383	57.000	0.390
ViewD-Snake	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CH9	7/23/2001	Grab	Snake River	ICE HARBOR-WALLA WALLA SHORE	1		Arsenic	8.31	mg/kg		6.383	57.000	0.390
ViewD-Snake	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	3504002	6/1/2004	Grab	Snake River	RM 10 - Above Ice Harbor Dam	1	Van Veen (Comp.)	Arsenic	8.90	mg/kg		6.383	57.000	0.390
ViewD-Snake	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	3504026	6/1/2004	Grab	Snake River	RM 10 - Above Ice Harbor Dam	1	Van Veen (Comp.)	Arsenic	9.20	mg/kg		6.383	57.000	0.390

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD-Snake	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4414206	6/1/2004	Grab	Snake River	RM 10 - Above Ice Harbor Dam	1	Van Veen (Comp.)	Arsenic	8.00	mg/kg		6.383	57.000	0.390
ViewD-Snake	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4414207	6/1/2004	Grab	Snake River	RM 10 - Above Ice Harbor Dam	1	Van Veen (Comp.)	Arsenic	8.90	mg/kg		6.383	57.000	0.390
ViewD-Snake	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7W8	9/20/2004		Snake River	ICE HARBOR-MID RIVER	1		Arsenic	9.18	mg/kg	X	6.383	57.000	0.390
ViewD-Snake	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3C6	8/16/1999		Snake River	ICE HARBOR-FRANKLIN SHORE	1		Chromium	46.80	mg/kg		42.065	260.000	30.000
ViewD-Snake	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3C8	8/16/1999		Snake River	ICE HARBOR-MID RIVER	1		Chromium	51.80	mg/kg		42.065	260.000	30.000
ViewD-Snake	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3D0	8/16/1999		Snake River	ICE HARBOR-WALLA WALLA SHORE	1		Chromium	51.30	mg/kg		42.065	260.000	30.000
ViewD-Snake	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CH5	7/23/2001	Grab	Snake River	ICE HARBOR-FRANKLIN SHORE	1		Chromium	55.70	mg/kg		42.065	260.000	30.000
ViewD-Snake	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CH7	7/23/2001	Grab	Snake River	ICE HARBOR-MID RIVER	1		Chromium	71.00	mg/kg		42.065	260.000	30.000
ViewD-Snake	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CH9	7/23/2001	Grab	Snake River	ICE HARBOR-WALLA WALLA SHORE	1		Chromium	58.70	mg/kg		42.065	260.000	30.000
ViewD-Snake	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7W8	9/20/2004		Snake River	ICE HARBOR-MID RIVER	1		Chromium	51.20	mg/kg	X	42.065	260.000	30.000
ViewD-Snake	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	3504002	6/1/2004	Grab	Snake River	RM 10 - Above Ice Harbor Dam	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD-Snake	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	3504026	6/1/2004	Grab	Snake River	RM 10 - Above Ice Harbor Dam	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD-Snake	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4414205	6/1/2004	Grab	Snake River	RM 10 - Above Ice Harbor Dam	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD-Snake	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4414206	6/1/2004	Grab	Snake River	RM 10 - Above Ice Harbor Dam	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000

Table D-2. Metals Data in Sediment Supporting Map Package #1 (26 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD-Snake	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4414207	6/1/2004	Grab	Snake River	RM 10 - Above Ice Harbor Dam	1	Van Veen (Comp.)	Selenium	4.90	mg/kg	U	0.375	1.000	390.000
ViewD-Yakima	Surface-Water Quality Assessment of the Yakima River Basin in Washington: Major and Minor Element Data for Sediment, Water and Aquatic Biota, 1987-91	1/1/1994	Yakima sed	8/25/1987	Grab	Yakima River	Kiona, Washington	1	This sample was taken at the USGS gauging station at Kiona on the Yakima River. This sediment sample was analyzed for metals concentrations.	Barium	530.00	mg/kg		126.412	48.000	5374.906
ViewD-Yakima	Surface-Water Quality Assessment of the Yakima River Basin in Washington: Major and Minor Element Data for Sediment, Water and Aquatic Biota, 1987-91	1/1/1994	Yakima sed	8/25/1987	Grab	Yakima River	Kiona, Washington	1	This sample was taken at the USGS gauging station at Kiona on the Yakima River. This sediment sample was analyzed for metals concentrations.	Chromium	61.00	mg/kg		42.065	260.000	30.000
ViewD-Yakima	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4434242	6/1/2004	Grab	Yakima River	RM 2 - Lower River (Below Highway 240 Bridge)	1	Petite Ponar (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD-Yakima	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4434243	6/1/2004	Grab	Yakima River	RM 2 - Lower River (Below Highway 240 Bridge)	1	Petite Ponar (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewD-Yakima	Surface-Water Quality Assessment of the Yakima River Basin in Washington: Major and Minor Element Data for Sediment, Water and Aquatic Biota, 1987-91	1/1/1994	Yakima sed	8/25/1987	Grab	Yakima River	Kiona, Washington	1	This sample was taken at the USGS gauging station at Kiona on the Yakima River. This sediment sample was analyzed for metals concentrations.	Vanadium	140.00	mg/kg		32.414	57.000	78.214
ViewE	Hanford Site Environmental Report for Calendar Year 1996	1/1/1997	B0G187	8/16/1996	Grab	Columbia River	MCNARY-2/3 OR. SHORE	1		Antimony	4.10	mg/kg	L	0.972	3.000	31.000
ViewE	Hanford Site Environmental Report for Calendar Year 1996	1/1/1997	B0G188	8/16/1996	Grab	Columbia River	MCNARY-OREGON SHORE	1		Antimony	3.90	mg/kg	L	0.972	3.000	31.000
ViewE	Hanford Site Environmental Report for Calendar Year 1996	1/1/1997	B0G189	8/16/1996	Grab	Columbia River	McNary Dam - Washington Shore	1		Antimony	7.20	mg/kg	L	0.972	3.000	31.000
ViewE	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17B60	8/8/2003	Grab	Columbia River	Above McNary Dam - Oregon Shore	1		Antimony	5.10	mg/kg		0.972	3.000	31.000

Table D-2. Metals Data in Sediment Supporting Map Package #1 (26 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewE	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17B65	8/8/2003	Grab	Columbia River	Above McNary Dam - 2/3 Oregon Shore	1		Antimony	3.70	mg/kg		0.972	3.000	31.000
ViewE	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17B67	8/8/2003	Grab	Columbia River	Above McNary Dam - Washington Shore	1		Antimony	3.40	mg/kg		0.972	3.000	31.000
ViewE	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3D4	8/2/1999		Columbia River	MCNARY-1/3 OR. SHORE	1		Arsenic	9.06	mg/kg		6.383	57.000	0.390
ViewE	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3H2	8/2/1999		Columbia River	MCNARY-OREGON SHORE	1		Arsenic	8.94	mg/kg		6.383	57.000	0.390
ViewE	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3H6	8/2/1999		Columbia River	MCNARY-2/3 OR. SHORE	1		Arsenic	8.13	mg/kg		6.383	57.000	0.390
ViewE	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3N9	8/2/1999		Columbia River	MCNARY-OR.SIDE NEAR DAM	1		Arsenic	9.60	mg/kg		6.383	57.000	0.390
ViewE	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3P1	8/2/1999		Columbia River	MCNARY-WASH.SIDE NEAR DAM	1		Arsenic	7.08	mg/kg		6.383	57.000	0.390
ViewE	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CJ3	7/20/2001	Grab	Columbia River	MCNARY-1/3 OR. SHORE	1		Arsenic	9.16	mg/kg		6.383	57.000	0.390
ViewE	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CK3	7/20/2001	Grab	Columbia River	MCNARY-OREGON SHORE	1		Arsenic	6.64	mg/kg		6.383	57.000	0.390
ViewE	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CK7	7/20/2001	Grab	Columbia River	MCNARY-2/3 OR. SHORE	1		Arsenic	12.20	mg/kg		6.383	57.000	0.390
ViewE	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CM7	7/23/2001	Grab	Columbia River	MCNARY-OR.SIDE NEAR DAM	1		Arsenic	10.20	mg/kg		6.383	57.000	0.390
ViewE	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CM9	7/23/2001	Grab	Columbia River	MCNARY-WASH.SIDE NEAR DAM	1		Arsenic	8.33	mg/kg		6.383	57.000	0.390
ViewE	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14YN8	7/19/2002	Grab	Columbia River	MCNARY-OR.SIDE NEAR DAM	1		Arsenic	8.97	mg/kg		6.383	57.000	0.390
ViewE	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14YP0	7/19/2002	Grab	Columbia River	MCNARY-WASH.SIDE NEAR DAM	1		Arsenic	7.90	mg/kg		6.383	57.000	0.390
ViewE	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4414202	6/1/2004	Composite	Columbia River	Above McNary Dam	1	Van Veen (Comp.)	Arsenic	7.10	mg/kg		6.383	57.000	0.390

Table D-2. Metals Data in Sediment Supporting Map Package #1 (26 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewE	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4414203	6/1/2004	Composite	Columbia River	Above McNary Dam	1	Van Veen (Comp.)	Arsenic	9.60	mg/kg		6.383	57.000	0.390
ViewE	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17712	7/16/2003	Grab	Columbia River	Above McNary Dam - Washington Shore	1	Also reported in PNNL 14878, WDOE 04-05-016, ODOE NUC-007	Arsenic	8.23	mg/kg		6.383	57.000	0.390
ViewE	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17710	7/16/2003	Grab	Columbia River	Above McNary Dam - Oregon Shore	1	Also reported in PNNL 14878, WDOE 04-05-016, ODOE NUC-007	Arsenic	9.93	mg/kg		6.383	57.000	0.390
ViewE	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17B60	8/8/2003	Grab	Columbia River	Above McNary Dam - Oregon Shore	1		Arsenic	7.60	mg/kg		6.383	57.000	0.390
ViewE	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17BJ3	7/14/2003	Composite	Columbia River	Above McNary Dam - 2/3 Oregon Shore	1		Arsenic	7.55	mg/kg		6.383	57.000	0.390
ViewE	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B19PL7	7/13/2004		Columbia River	MCNARY-OR.SIDE NEAR DAM	1		Arsenic	10.20	mg/kg	X	6.383	57.000	0.390
ViewE	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B19PL9	7/13/2004		Columbia River	MCNARY-WASH.SIDE NEAR DAM	1		Arsenic	9.31	mg/kg	X	6.383	57.000	0.390
ViewE	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7N9	9/21/2004		Columbia River	MCNARY-2/3 OR. SHORE	1		Arsenic	9.50	mg/kg	X	6.383	57.000	0.390
ViewE	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1D0D2	8/9/2005		Columbia River	MCNARY-OR.SIDE NEAR DAM	1		Arsenic	9.80	mg/kg	X	6.383	57.000	0.390
ViewE	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1D0D4	8/9/2005		Columbia River	MCNARY-WASH.SIDE NEAR DAM	1		Arsenic	7.29	mg/kg	X	6.383	57.000	0.390
ViewE	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17B60	8/8/2003	Grab	Columbia River	Above McNary Dam - Oregon Shore	1		Barium	150.00	mg/kg		126.412	48.000	5374.906
ViewE	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3D4	8/2/1999		Columbia River	MCNARY-1/3 OR. SHORE	1		Chromium	62.90	mg/kg		42.065	260.000	30.000
ViewE	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3H2	8/2/1999		Columbia River	MCNARY-OREGON SHORE	1		Chromium	59.20	mg/kg		42.065	260.000	30.000

Table D-2. Metals Data in Sediment Supporting Map Package #1 (26 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewE	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3H4	8/2/1999		Columbia River	MCNARY-WASH. SHORE	1		Chromium	54.60	mg/kg		42.065	260.000	30.000
ViewE	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3H6	8/2/1999		Columbia River	MCNARY-2/3 OR. SHORE	1		Chromium	61.10	mg/kg		42.065	260.000	30.000
ViewE	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3N9	8/2/1999		Columbia River	MCNARY-OR.SIDE NEAR DAM	1		Chromium	60.80	mg/kg		42.065	260.000	30.000
ViewE	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W3P1	8/2/1999		Columbia River	MCNARY-WASH.SIDE NEAR DAM	1		Chromium	54.60	mg/kg		42.065	260.000	30.000
ViewE	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CJ3	7/20/2001	Grab	Columbia River	MCNARY-1/3 OR. SHORE	1		Chromium	70.50	mg/kg		42.065	260.000	30.000
ViewE	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CK3	7/20/2001	Grab	Columbia River	MCNARY-OREGON SHORE	1		Chromium	51.30	mg/kg		42.065	260.000	30.000
ViewE	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CK5	7/20/2001	Grab	Columbia River	MCNARY-WASH. SHORE	1		Chromium	59.70	mg/kg		42.065	260.000	30.000
ViewE	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CK7	7/20/2001	Grab	Columbia River	MCNARY-2/3 OR. SHORE	1		Chromium	72.80	mg/kg		42.065	260.000	30.000
ViewE	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CM7	7/23/2001	Grab	Columbia River	MCNARY-OR.SIDE NEAR DAM	1		Chromium	70.40	mg/kg		42.065	260.000	30.000
ViewE	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12CM9	7/23/2001	Grab	Columbia River	MCNARY-WASH.SIDE NEAR DAM	1		Chromium	70.20	mg/kg		42.065	260.000	30.000
ViewE	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14YN8	7/19/2002	Grab	Columbia River	MCNARY-OR.SIDE NEAR DAM	1		Chromium	58.40	mg/kg		42.065	260.000	30.000
ViewE	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14YP0	7/19/2002	Grab	Columbia River	MCNARY-WASH.SIDE NEAR DAM	1		Chromium	63.90	mg/kg		42.065	260.000	30.000
ViewE	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17712	7/16/2003	Grab	Columbia River	Above McNary Dam - Washington Shore	1	Also reported in PNNL 14878, WDOE 04-05-016, ODOE NUC-007	Chromium	73.80	mg/kg	C	42.065	260.000	30.000
ViewE	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17710	7/16/2003	Grab	Columbia River	Above McNary Dam - Oregon Shore	1	Also reported in PNNL 14878, WDOE 04-05-016, ODOE NUC-007	Chromium	71.20	mg/kg	C	42.065	260.000	30.000
ViewE	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17BJ3	7/14/2003	Composite	Columbia River	Above McNary Dam - 2/3 Oregon Shore	1		Chromium	73.20	mg/kg		42.065	260.000	30.000

Table D-2. Metals Data in Sediment Supporting Map Package #1 (26 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewE	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B19PL7	7/13/2004		Columbia River	MCNARY-OR.SIDE NEAR DAM	1		Chromium	63.50	mg/kg	CX	42.065	260.000	30.000
ViewE	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B19PL9	7/13/2004		Columbia River	MCNARY-WASH.SIDE NEAR DAM	1		Chromium	67.90	mg/kg	CX	42.065	260.000	30.000
ViewE	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7N9	9/21/2004		Columbia River	MCNARY-2/3 OR. SHORE	1		Chromium	61.70	mg/kg	X	42.065	260.000	30.000
ViewE	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1D0D2	8/9/2005		Columbia River	MCNARY-OR.SIDE NEAR DAM	1		Chromium	50.20	mg/kg	X	42.065	260.000	30.000
ViewE	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1D0D4	8/9/2005		Columbia River	MCNARY-WASH.SIDE NEAR DAM	1		Chromium	53.90	mg/kg	X	42.065	260.000	30.000
ViewE	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	3504038	6/1/2004	Composite	Columbia River	Above McNary Dam	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewE	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4414200	6/1/2004	Composite	Columbia River	Above McNary Dam	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewE	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4414202	6/1/2004	Composite	Columbia River	Above McNary Dam	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewE	Mid-Columbia River Basin Sediment Chemical Contaminants Study June 2004 to October 2004 addendum	5/1/2004	4414203	6/1/2004	Composite	Columbia River	Above McNary Dam	1	Van Veen (Comp.)	Selenium	5.00	mg/kg	U	0.375	1.000	390.000
ViewE	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17B57	8/8/2003	Grab	Columbia River	Above McNary Dam - Oregon Shore	1		Selenium	1.20	mg/kg		0.375	1.000	390.000
ViewE	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17B60	8/8/2003	Grab	Columbia River	Above McNary Dam - Oregon Shore	1		Selenium	1.30	mg/kg		0.375	1.000	390.000
ViewE	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17B67	8/8/2003	Grab	Columbia River	Above McNary Dam - Washington Shore	1		Selenium	1.20	mg/kg		0.375	1.000	390.000
ViewE	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B19PL7	7/13/2004		Columbia River	MCNARY-OR.SIDE NEAR DAM	1		Selenium	1.78	mg/kg	X	0.375	1.000	390.000

Table D-2. Metals Data in Sediment Supporting Map Package #1 (26 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewE	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B19PL9	7/13/2004		Columbia River	MCNARY-WASH.SIDE NEAR DAM	1		Selenium	1.72	mg/kg	X	0.375	1.000	390.000
ViewE	Hanford Site Environmental Report for Calendar Year 1994	1/1/1995	B0CSG8	9/23/1994	Grab	Columbia River	Above McNary Dam	1	coordinates estimated	Vanadium	75.00	mg/kg		32.414	57.000	78.214
ViewE	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17B57	8/8/2003	Grab	Columbia River	Above McNary Dam - Oregon Shore	1		Vanadium	72.00	mg/kg		32.414	57.000	78.214
ViewE	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17B60	8/8/2003	Grab	Columbia River	Above McNary Dam - Oregon Shore	1		Vanadium	64.00	mg/kg		32.414	57.000	78.214
ViewE	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17B67	8/8/2003	Grab	Columbia River	Above McNary Dam - Washington Shore	1		Vanadium	77.00	mg/kg		32.414	57.000	78.214

Refer to Columbia River Component Data Evaluation Summary Report July 2006 WCH-91 for Category definitions.
Refer to Table D-6 for Lab Qualifier definitions.
[a] Unassigned - Specific location coordinates are not available for this sample and therefore are not represented on the maps, however these results are included in the database and the summary tables.

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1BPP4	4/25/2005			SD-098-1	1		Aluminum	16.3000	mg/L	C	0.02325	0.08700	36.49867
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DTV3	11/1/2005			NS-2 SEEP	1	NS-2-SEEP	Aluminum	0.3070	mg/L		0.02325	0.08700	36.49867
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7W4	11/10/2005			SK-057-3	1	SK-057-3	Aluminum	0.8860	mg/L	C	0.02325	0.08700	36.49867
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7W5	11/10/2005			SK-057-3	1	SK-057-3	Aluminum	0.0992	mg/L	BC	0.02325	0.08700	36.49867
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7X6	11/10/2005			SK-077-1	1	SK-077-1	Aluminum	0.1610	mg/L	BC	0.02325	0.08700	36.49867
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7X7	11/10/2005			SK-077-1	1	SK-077-1	Aluminum	0.0970	mg/L	BC	0.02325	0.08700	36.49867
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7Y4	11/10/2005			SD-098-1	1	SD-098-1	Aluminum	0.2580	mg/L	C	0.02325	0.08700	36.49867
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7Y5	11/10/2005			SD-098-1	1	SD-098-1	Aluminum	0.1060	mg/L	BC	0.02325	0.08700	36.49867
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1BPP3	4/25/2005			SD-098-1	1		Barium	0.0464	mg/L	B	0.02684	0.00400	1.00000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1BPP4	4/25/2005			SD-098-1	1		Barium	0.2160	mg/L		0.02684	0.00400	1.00000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1CCX4	3/18/2005			NS-2 SEEP	1	NS-2 SEEP	Barium	0.0286	mg/L	B	0.02684	0.00400	1.00000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1CCX7	3/18/2005			NS-3 SEEP	1	NS-3 SEEP	Barium	0.0361	mg/L	B	0.02684	0.00400	1.00000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1D3N3	6/10/2005			NS-2 SEEP	1	NS-2 SEEP	Barium	0.0313	mg/L	B	0.02684	0.00400	1.00000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1D3N6	6/10/2005			NS-3 SEEP	1	NS-3 SEEP	Barium	0.0300	mg/L	B	0.02684	0.00400	1.00000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1D3N9	6/10/2005			NS-4 SEEP	1	NS-4 SEEP	Barium	0.0281	mg/L	B	0.02684	0.00400	1.00000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DTV3	11/1/2005			NS-2 SEEP	1	NS-2-SEEP	Barium	0.0324	mg/L	B	0.02684	0.00400	1.00000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DTV4	11/1/2005			NS-3 SEEP	1	NS-3-SEEP	Barium	0.0307	mg/L	B	0.02684	0.00400	1.00000

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DTV5	11/1/2005			NS-4 SEEP	1	NS-4-SEEP	Barium	0.0283	mg/L	B	0.02684	0.00400	1.00000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7W4	11/10/2005			SK-057-3	1	SK-057-3	Barium	0.0378	mg/L	B	0.02684	0.00400	1.00000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7W5	11/10/2005			SK-057-3	1	SK-057-3	Barium	0.0290	mg/L	B	0.02684	0.00400	1.00000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7Y4	11/10/2005			SD-098-1	1	SD-098-1	Barium	0.0358	mg/L	B	0.02684	0.00400	1.00000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7Y5	11/10/2005			SD-098-1	1	SD-098-1	Barium	0.0333	mg/L	B	0.02684	0.00400	1.00000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F807	10/18/2005			300 SPR 10	1	SPRING #10	Barium	0.0501	mg/L	B	0.02684	0.00400	1.00000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F811	10/18/2005			300-FF-5 RI|B01322	1	SPRING #11	Barium	0.0439	mg/L	B	0.02684	0.00400	1.00000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BH56	11/15/2004			SEEP 039-2	1	SB-039-2	Hexavalent Chromium	0.0120	mg/L		0.00136	0.01000	0.10950
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1BPP4	4/25/2005			SD-098-1	1		Iron	14.8000	mg/L	C	0.02420	1.00000	0.30000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DTV3	11/1/2005			NS-2 SEEP	1	NS-2-SEEP	Iron	1.4200	mg/L		0.02420	1.00000	0.30000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7W4	11/10/2005			SK-057-3	1	SK-057-3	Iron	0.7550	mg/L		0.02420	1.00000	0.30000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1BPP4	4/25/2005			SD-098-1	1		Manganese	0.5930	mg/L		0.00197	0.12000	0.05000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1CCX7	3/18/2005			NS-3 SEEP	1	NS-3 SEEP	Manganese	0.1250	mg/L		0.00197	0.12000	0.05000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1D3N3	6/10/2005			NS-2 SEEP	1	NS-2 SEEP	Manganese	0.0682	mg/L		0.00197	0.12000	0.05000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F805	10/18/2005			300 SPR 10	1	SPRING #10	Uranium	0.0431	mg/L		0.00050	0.00260	0.00730
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F809	10/18/2005			300-FF-5 RI|B01322	1	SPRING #11	Uranium	0.0372	mg/L		0.00050	0.00260	0.00730
ViewA	100/300 Areas RCBRA	6/11/2007	J111X4	1/25/2006	Grab	RCBRA REFERENCE	AQUATIC SITE 11	1		Arsenic	0.0034	mg/L	U	0.00063	0.15000	0.00002

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewA	100/300 Areas RCBRA	6/11/2007	J111X5	1/23/2006	Grab	RCBRA REFERENCE	AQUATIC SITE 12	1		Arsenic	0.0034	mg/L	U	0.00063	0.15000	0.00002
ViewA	100/300 Areas RCBRA	6/11/2007	J111X6	1/23/2006	Grab	RCBRA REFERENCE	AQUATIC SITE 13	1		Arsenic	0.0034	mg/L	U	0.00063	0.15000	0.00002
ViewA	100/300 Areas RCBRA	6/11/2007	J11205	1/24/2006	Grab	RCBRA REFERENCE	AQUATIC SITE 14	1		Arsenic	0.0034	mg/L	U	0.00063	0.15000	0.00002
ViewA	100/300 Areas RCBRA	6/11/2007	J11206	1/24/2006	Grab	RCBRA REFERENCE	AQUATIC SITE 16	1		Arsenic	0.0034	mg/L	U	0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0V203	6/11/1999	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0V204	6/11/1999	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0V205	6/11/1999	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0V206	6/11/1999	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0V207	6/11/1999	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0V229	6/11/1999	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W972	9/10/1999	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YCD5	6/19/2000	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YCC7	6/19/2000	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YCC8	6/19/2000	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B124Y0	6/14/2001	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B124Y1	6/14/2001	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B124Y2	6/14/2001	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B124Y9	6/14/2001	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12522	6/14/2001	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12523	6/14/2001	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RN9	8/27/2001	Discrete	Columbia River	Vernita Bridge-1	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RP0	8/27/2001	Discrete	Columbia River	Vernita Bridge-1	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RP3	8/27/2001	Discrete	Columbia River	Vernita Bridge-2	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RP4	8/27/2001	Discrete	Columbia River	Vernita Bridge-2	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T75	9/7/2001	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T76	9/7/2001	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T77	9/7/2001	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T84	9/7/2001	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TH6	9/7/2001	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TH7	9/7/2001	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TH8	9/7/2001	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TH9	9/7/2001	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13J18	11/14/2001	Discrete	Columbia River	Vernita Bridge-1	1	coordinates estimated, Seep	Arsenic	0.0011	mg/L		0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13J19	11/14/2001	Discrete	Columbia River	Vernita Bridge-1	1	coordinates estimated, Seep	Arsenic	0.0017	mg/L		0.00063	0.15000	0.00002

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RT4	6/10/2002	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	Arsenic	0.0008	mg/L	X	0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RT6	6/10/2002	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RV3	6/10/2002	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	Arsenic	0.0008	mg/L	X	0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RW4	6/10/2002	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	Arsenic	0.0006	mg/L	X	0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RW5	6/10/2002	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RW6	6/10/2002	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RW7	6/10/2002	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	Arsenic	0.0008	mg/L	X	0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B171V0	6/9/2003	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	Arsenic	0.0008	mg/L	C	0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B171V1	6/9/2003	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	Arsenic	0.0008	mg/L	C	0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B171V2	6/9/2003	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	Arsenic	0.0009	mg/L	C	0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B171V9	6/9/2003	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	Arsenic	0.0008	mg/L	C	0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B171Y1	6/9/2003	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	Arsenic	0.0006	mg/L	C	0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B171Y3	6/9/2003	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	Arsenic	0.0007	mg/L	C	0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B171Y4	6/9/2003	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	Arsenic	0.0006	mg/L	C	0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B183T7	12/9/2003	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	Arsenic	0.0007	mg/L	CX	0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B183V0	12/9/2003	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	Arsenic	0.0007	mg/L	C	0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6Y0	9/13/2004	TRANSECT, RAW GRAB	Columbia River	VERNITA-2 HRM 0.3	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewA	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6Y1	9/13/2004	TRANSECT, RAW GRAB	Columbia River	VERNITA-3 HRM 0.3	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6Y2	9/13/2004	TRANSECT, RAW GRAB	Columbia River	VERNITA-4 HRM 0.3	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6Y9	9/13/2004	TRANSECT, RAW GRAB	Columbia River	VERNITA-1 HRM 0.3	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewA	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B750	9/13/2004	TRANSECT, RAW GRAB	Columbia River	VERNITA-4 HRM 0.3	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewA	100/300 Areas RCBRA	6/11/2007	J111X4	1/25/2006	Grab	RCBRA REFERENCE	AQUATIC SITE 11	1		Barium	0.0299	mg/L	NA	0.02684	0.00400	1.00000
ViewA	100/300 Areas RCBRA	6/11/2007	J111X5	1/23/2006	Grab	RCBRA REFERENCE	AQUATIC SITE 12	1		Barium	0.0304	mg/L	NA	0.02684	0.00400	1.00000
ViewA	100/300 Areas RCBRA	6/11/2007	J111X6	1/23/2006	Grab	RCBRA REFERENCE	AQUATIC SITE 13	1		Barium	0.0295	mg/L	NA	0.02684	0.00400	1.00000
ViewA	100/300 Areas RCBRA	6/11/2007	J11205	1/24/2006	Grab	RCBRA REFERENCE	AQUATIC SITE 14	1		Barium	0.0299	mg/L	C	0.02684	0.00400	1.00000
ViewA	100/300 Areas RCBRA	6/11/2007	J11206	1/24/2006	Grab	RCBRA REFERENCE	AQUATIC SITE 16	1		Barium	0.0326	mg/L	NA	0.02684	0.00400	1.00000
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RN9	8/27/2001	Discrete	Columbia River	Vernita Bridge-1	1	coordinates estimated	Barium	0.0284	mg/L		0.02684	0.00400	1.00000
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RP0	8/27/2001	Discrete	Columbia River	Vernita Bridge-1	1	coordinates estimated	Barium	0.0280	mg/L		0.02684	0.00400	1.00000
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RP3	8/27/2001	Discrete	Columbia River	Vernita Bridge-2	1	coordinates estimated	Barium	0.0294	mg/L		0.02684	0.00400	1.00000
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RP4	8/27/2001	Discrete	Columbia River	Vernita Bridge-2	1	coordinates estimated	Barium	0.0282	mg/L		0.02684	0.00400	1.00000
ViewA	100/300 Areas RCBRA	6/11/2007	J111X6	1/23/2006	Grab	RCBRA REFERENCE	AQUATIC SITE 13	1		Boron	0.0132	mg/L	NA	0.01172	0.00160	0.00000
ViewA	100/300 Areas RCBRA	6/11/2007	J11205	1/24/2006	Grab	RCBRA REFERENCE	AQUATIC SITE 14	1		Boron	0.0177	mg/L	NA	0.01172	0.00160	0.00000
ViewA	100/300 Areas RCBRA	6/11/2007	J11205	1/24/2006	Grab	RCBRA REFERENCE	AQUATIC SITE 14	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewA	100/300 Areas RCBRA	6/11/2007	J111X4	1/25/2006	Grab	RCBRA REFERENCE	AQUATIC SITE 11	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewA	100/300 Areas RCBRA	6/11/2007	J111X5	1/23/2006	Grab	RCBRA REFERENCE	AQUATIC SITE 12	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewA	100/300 Areas RCBRA	6/11/2007	J111X6	1/23/2006	Grab	RCBRA REFERENCE	AQUATIC SITE 13	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewA	100/300 Areas RCBRA	6/11/2007	J11206	1/24/2006	Grab	RCBRA REFERENCE	AQUATIC SITE 16	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewB1	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10F98	10/25/2000	Discrete	Columbia River	SB-037-1	1	SEEP	Aluminum	0.0899	mg/L	U	0.02325	0.08700	36.49867
ViewB1	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10FB1	10/25/2000	Discrete	Columbia River	100-B SPRING 38-3	1	SEEP	Aluminum	0.0899	mg/L	U	0.02325	0.08700	36.49867
ViewB1	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13609	10/22/2001		Columbia River	100-B SPRING 38-3	1	SB-038-3, Seep	Aluminum	0.1440	mg/L	B	0.02325	0.08700	36.49867
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17JR1	10/20/2003	Discrete	Columbia River	100-K SPRING 63-1	1	Seep	Aluminum	0.0958	mg/L	U	0.02325	0.08700	36.49867
ViewB1	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7X3	11/10/2005		Columbia River	100-K SPRING 68-1	1	SK-068-1	Aluminum	0.1030	mg/L	BC	0.02325	0.08700	36.49867
ViewB1	100/300 Areas RCBRA	6/11/2007	J11235	1/25/2006	Grab	100 K	CHROMIUM SITE 1	1		Arsenic	0.0034	mg/L	U	0.00063	0.15000	0.00002
ViewB1	100/300 Areas RCBRA	6/11/2007	J11236	1/25/2006	Grab	100 K	CHROMIUM SITE 2	1		Arsenic	0.0034	mg/L	U	0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP15	10/25/1999		Columbia River	100-B SPRING 38-3	1	SEEP	Arsenic	0.0011	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP24	10/25/1999		Columbia River	100-B SPRING 38-3	1	SEEP	Arsenic	0.0012	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP27	10/25/1999		Columbia River	100-B SPRING 39-2	1	SEEP	Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP29	10/25/1999		Columbia River	100-B SPRING 39-2	1	SEEP	Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP32	10/25/1999		Columbia River	100-K SPRING 63-1	1	SEEP	Arsenic	0.0015	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP34	10/25/1999		Columbia River	100-K SPRING 63-1	1	SEEP	Arsenic	0.0016	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10937	10/17/2000	Discrete	Columbia River	100-B SPRING 38-3	1	SEEP	Arsenic	0.0018	mg/L		0.00063	0.15000	0.00002

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB1	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10944	10/17/2000	Discrete	Columbia River	100-B SPRING 38-3	1	SEEP	Arsenic	0.0016	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10953	10/17/2000	Discrete	Columbia River	100-K SPRING 63-1	1	SEEP	Arsenic	0.0014	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10954	10/17/2000	Discrete	Columbia River	100-K SPRING 63-1	1	SEEP	Arsenic	0.0013	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W45	5/4/2001	Discrete	Columbia River	100-B SPRING 37-1	1	Seep	Arsenic	0.0015	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W53	5/4/2001	Discrete	Columbia River	100-B SPRING 37-1	1	Seep	Arsenic	0.0014	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12X43	10/22/2001	Discrete	Columbia River	100-B SPRING 38-3	1	Seep	Arsenic	0.0010	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12X51	10/22/2001	Discrete	Columbia River	100-B SPRING 38-3	1	Seep	Arsenic	0.0014	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12X60	10/25/2001	Discrete	Columbia River	100-K SPRING 63-1	1	Seep	Arsenic	0.0015	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12X61	10/25/2001	Discrete	Columbia River	100-K SPRING 63-1	1	Seep	Arsenic	0.0012	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C62	9/16/2002	Discrete	Columbia River	100-B SPRING 37-1	1	Seep	Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C71	9/16/2002	Discrete	Columbia River	100-B SPRING 37-1	1	Seep	Arsenic	0.0010	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C79	9/16/2002	Discrete	Columbia River	100-K SPRING 63-2	1	Seep	Arsenic	0.0022	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C80	9/16/2002	Discrete	Columbia River	100-K SPRING 63-2	1	Seep	Arsenic	0.0021	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C81	10/21/2002	Discrete	Columbia River	100-K SPRING 77-1	1	Seep	Arsenic	0.0013	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17J76	10/20/2003	Discrete	Columbia River	100B SPRING 37-1	1	coordinates estimated, Seep	Arsenic	0.0010	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17J81	10/20/2003	Discrete	Columbia River	100B SPRING 37-1	1	coordinates estimated, Seep	Arsenic	0.0011	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17J82	10/20/2003	Discrete	Columbia River	100B SPRING 39-2	1	Seep	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002

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ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17J83	10/20/2003	Discrete	Columbia River	100B SPRING 39-2	1	BOTTLE LEAKED WAS REBOTTLED AND SENT TO LAB FOR ANALYSES. Seep	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17J84	10/20/2003	Discrete	Columbia River	100K SPRING 63-2	1	coordinates estimated, Seep	Arsenic	0.0014	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17J85	10/20/2003	Discrete	Columbia River	100K SPRING 63-2	1	coordinates estimated, Seep	Arsenic	0.0015	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B180H6	11/13/2003	Discrete	Columbia River	100-B SPRING 37-1	1	Seep	Arsenic	0.0011	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B180H7	11/13/2003	Discrete	Columbia River	100-B SPRING 38-3	1	Seep	Arsenic	0.0016	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B180H8	11/17/2003	Discrete	Columbia River	100-B SPRING 39-2	1	Seep	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFT7	10/11/2004	UNFILTERED, RAW GRAB	Columbia River	100-B SPRING 37-1	1		Arsenic	0.0013	mg/L	X	0.00063	0.15000	0.00002
ViewB1	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFV3	10/11/2004	RAW GRAB	Columbia River	100-B SPRING 37-1	1		Arsenic	0.0012	mg/L	X	0.00063	0.15000	0.00002
ViewB1	100/300 Areas RCBRA	6/11/2007	J11235	1/25/2006	Grab	100 K	CHROMIUM SITE 1	1		Barium	0.0297	mg/L	NA	0.02684	0.00400	1.00000
ViewB1	100/300 Areas RCBRA	6/11/2007	J11236	1/25/2006	Grab	100 K	CHROMIUM SITE 2	1		Barium	0.0296	mg/L	NA	0.02684	0.00400	1.00000
ViewB1	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10F98	10/25/2000	Discrete	Columbia River	SB-037-1	1	SEEP	Barium	0.0615	mg/L	B	0.02684	0.00400	1.00000
ViewB1	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10FB1	10/25/2000	Discrete	Columbia River	100-B SPRING 38-3	1	SEEP	Barium	0.0701	mg/L	B	0.02684	0.00400	1.00000
ViewB1	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13606	10/22/2001		Columbia River	100-B SPRING 37-1	1	SB-037-1, Seep	Barium	0.0739	mg/L	B	0.02684	0.00400	1.00000
ViewB1	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13609	10/22/2001		Columbia River	100-B SPRING 38-3	1	SB-038-3, Seep	Barium	0.0941	mg/L	B	0.02684	0.00400	1.00000
ViewB1	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15MM0	10/21/2002	Discrete	Columbia River	100-B SPRING 37-1	1	Seep	Barium	0.0582	mg/L	B	0.02684	0.00400	1.00000
ViewB1	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15MM3	10/21/2002	Discrete	Columbia River	100-B SPRING 38-3	1	Seep	Barium	0.0721	mg/L	B	0.02684	0.00400	1.00000

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ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17JR1	10/20/2003	Discrete	Columbia River	100-K SPRING 63-1	1	Seep	Barium	0.0324	mg/L	B	0.02684	0.00400	1.00000
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17LC4	11/10/2003	Discrete	Columbia River	100-K SPRING 68-1	1	Seep	Barium	0.0348	mg/L	B	0.02684	0.00400	1.00000
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B180H6	11/13/2003	Discrete	Columbia River	100-B SPRING 37-1	1	Seep	Barium	0.0465	mg/L	C	0.02684	0.00400	1.00000
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B180H7	11/13/2003	Discrete	Columbia River	100-B SPRING 38-3	1	Seep	Barium	0.0444	mg/L	C	0.02684	0.00400	1.00000
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B180H8	11/17/2003	Discrete	Columbia River	100-B SPRING 39-2	1	Seep	Barium	0.0300	mg/L	C	0.02684	0.00400	1.00000
ViewB1	Citizens Monitoring and Technical Assessment - Analysis of Chemical Contaminants in Hanford Reach Biota and Environmental Materials at the Perimeter of the Hanford Nuclear Reservation and on the Columbia River	6/1/2005	HR021K	10/8/2003	Discrete	Columbia River	K Reactor Area - Water	1		Chromium	0.1000	mg/L	U	0.00019	0.07400	0.10950
ViewB1	100/300 Areas RCBRA	6/11/2007	J11235	1/25/2006	Grab	100 K	CHROMIUM SITE 1	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewB1	100/300 Areas RCBRA	6/11/2007	J11236	1/25/2006	Grab	100 K	CHROMIUM SITE 2	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JP7	10/17/2000	Discrete	Columbia River	100-D SPRING 102-1	1	SEEP	Aluminum	0.1450	mg/L	B	0.02325	0.08700	36.49867
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JR0	10/17/2000	Discrete	Columbia River	SD-110-2	1	SEEP	Aluminum	0.1340	mg/L	B	0.02325	0.08700	36.49867
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JR1	10/12/2000	Discrete	Columbia River	SD-98-1	1	SEEP	Aluminum	0.2650	mg/L		0.02325	0.08700	36.49867
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JT1	10/17/2000	Discrete	Columbia River	SD-110-2	1	SEEP	Aluminum	0.1790	mg/L	B	0.02325	0.08700	36.49867
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JT9	10/12/2000	Discrete	Columbia River	SD-98-1	1	SEEP	Aluminum	2.3300	mg/L		0.02325	0.08700	36.49867
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B135X3	10/25/2001		Columbia River	100-D SPRING 98-1	1	SD-98-1, Seep	Aluminum	3.4700	mg/L		0.02325	0.08700	36.49867
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13605	10/25/2001		Columbia River	100-K SPRING 82-2	1	SK-082-2, Seep	Aluminum	0.3060	mg/L		0.02325	0.08700	36.49867

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ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HV8	10/21/2002	Discrete	Columbia River	100-D SPRING 102-1	1	Seep	Aluminum	0.5930	mg/L		0.02325	0.08700	36.49867
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HW1	10/21/2002	Discrete	Columbia River	100-D SPRING 110-1	1	Seep	Aluminum	21.1000	mg/L		0.02325	0.08700	36.49867
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HW4	10/21/2002	Discrete	Columbia River	100-D SPRING 110-1	1	Seep	Aluminum	7.8500	mg/L		0.02325	0.08700	36.49867
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15LM4	10/21/2002	Discrete	Columbia River	100-K SPRING 77-1	1	Seep	Aluminum	0.3430	mg/L		0.02325	0.08700	36.49867
ViewB2	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17JP0	10/27/2003	Discrete	Columbia River	100-D SPRING 102-1	1	Seep	Aluminum	0.0958	mg/L	U	0.02325	0.08700	36.49867
ViewB2	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17JN9	10/27/2003	Discrete	Columbia River	100-D SPRING 102-1	1	Seep	Aluminum	0.0958	mg/L	U	0.02325	0.08700	36.49867
ViewB2	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17JP2	10/27/2003	Discrete	Columbia River	100-D SPRING 102-1	1	Seep	Aluminum	0.3150	mg/L		0.02325	0.08700	36.49867
ViewB2	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17JP3	10/27/2003	Discrete	Columbia River	100-D SPRING 102-1	1	Seep	Aluminum	0.0958	mg/L	U	0.02325	0.08700	36.49867
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7N7	11/15/2005		Columbia River	100-D SPRING 102-1	1	100-D SPRING 102-1	Aluminum	5.3900	mg/L	C	0.02325	0.08700	36.49867
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7P1	11/14/2005		Columbia River	100-D SPRING 110-1	1	100-D SPRING 110-1	Aluminum	0.6490	mg/L	C	0.02325	0.08700	36.49867
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7P2	11/14/2005		Columbia River	100-D SPRING 110-1	1	100-D SPRING 110-1	Aluminum	0.1050	mg/L	BC	0.02325	0.08700	36.49867
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7Y0	11/10/2005		Columbia River	100-K SPRING 82-2	1	SK-082-2	Aluminum	0.8580	mg/L	C	0.02325	0.08700	36.49867
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7Y1	11/10/2005		Columbia River	100-K SPRING 82-2	1	SK-082-2	Aluminum	0.1010	mg/L	BC	0.02325	0.08700	36.49867
ViewB2	100-NR-2 STUDY AREA ECOLOGICAL RISK ASSESSMENT SAMPLING AND ANALYSIS PLAN	1/1/2005	B18XL7	3/29/2004	Discrete	Columbia River	100-N SPRING 8-13	1	DUP IS SAMPLE B18XM0	Arsenic	0.0027	mg/L	X	0.00063	0.15000	0.00002
ViewB2	100-NR-2 STUDY AREA ECOLOGICAL RISK ASSESSMENT SAMPLING AND ANALYSIS PLAN	1/1/2005	B18XM0	3/29/2004	Discrete	Columbia River	100-N SPRING 8-13	1	DUP SAMPLE FOR B18XL7 coordinates estimated	Arsenic	0.0027	mg/L	X	0.00063	0.15000	0.00002
ViewB2	100/300 Areas RCBRA	6/11/2007	J11238	1/29/2006	Grab	100 K	CHROMIUM SITE 3	1		Arsenic	0.0034	mg/L	U	0.00063	0.15000	0.00002

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ViewB2	100/300 Areas RCBRA	6/11/2007	J11239	1/29/2006	Grab	100 K	CHROMIUM SITE 4	1		Arsenic	0.0034	mg/L	U	0.00063	0.15000	0.00002
ViewB2	100/300 Areas RCBRA	6/11/2007	J11279	1/29/2006	Grab	100 D	CHROMIUM SITE 5	1		Arsenic	0.0034	mg/L	U	0.00063	0.15000	0.00002
ViewB2	100/300 Areas RCBRA	6/11/2007	J112F7	2/6/2006	Grab	100 D	CHROMIUM SITE 8	1		Arsenic	0.0034	mg/L	U	0.00063	0.15000	0.00002
ViewB2	100/300 Areas RCBRA	6/11/2007	J112Y0	2/6/2006	Grab	100 N	STRONTIUM SITE 8	1		Arsenic	0.0034	mg/L	U	0.00063	0.15000	0.00002
ViewB2	100/300 Areas RCBRA	6/11/2007	J11280	2/6/2006	Grab	100 D	CHROMIUM SITE 8	1		Arsenic	0.0034	mg/L	NA	0.00063	0.15000	0.00002
ViewB2	100/300 Areas RCBRA	6/11/2007	J112F6	2/1/2006	Grab	100 D	CHROMIUM SITE 7	1		Arsenic	0.0051	mg/L	NA	0.00063	0.15000	0.00002
ViewB2	100/300 Areas RCBRA	6/11/2007	J112F8	2/6/2006	Grab	100 D	CHROMIUM SITE 9	1		Arsenic	0.0041	mg/L	NA	0.00063	0.15000	0.00002
ViewB2	100/300 Areas RCBRA	6/11/2007	J112F9	2/1/2006	Grab	100 D	CHROMIUM SITE 10	1		Arsenic	0.0034	mg/L	U	0.00063	0.15000	0.00002
ViewB2	100/300 Areas RCBRA	6/11/2007	J112X9	2/1/2006	Grab	100 D	CHROMIUM SITE 6	1		Arsenic	0.0034	mg/L	U	0.00063	0.15000	0.00002
ViewB2	100/300 Areas RCBRA	6/11/2007	J116F9	2/3/2006	Grab	100 N	STRONTIUM SITE 6	1		Arsenic	0.0358	mg/L	U	0.00063	0.15000	0.00002
ViewB2	100/300 Areas RCBRA	6/11/2007	J116H0	2/3/2006	Grab	100 N	STRONTIUM SITE 1	1		Arsenic	0.0358	mg/L	U	0.00063	0.15000	0.00002
ViewB2	100/300 Areas RCBRA	6/11/2007	J116H1	2/3/2006	Grab	100 N	STRONTIUM SITE 10	1		Arsenic	0.0358	mg/L	U	0.00063	0.15000	0.00002
ViewB2	100/300 Areas RCBRA	6/11/2007	J116H3	2/2/2006	Grab	100 N	STRONTIUM SITE 3	1		Arsenic	0.0358	mg/L	U	0.00063	0.15000	0.00002
ViewB2	100/300 Areas RCBRA	6/11/2007	J116H4	2/2/2006	Grab	100 N	STRONTIUM SITE 7	1		Arsenic	0.0358	mg/L	U	0.00063	0.15000	0.00002
ViewB2	100/300 Areas RCBRA	6/11/2007	J116H5	2/2/2006	Grab	100 N	STRONTIUM SITE 4	1		Arsenic	0.0358	mg/L	U	0.00063	0.15000	0.00002
ViewB2	100/300 Areas RCBRA	6/11/2007	J116H6	2/3/2006	Grab	100 N	STRONTIUM SITE 5	1		Arsenic	0.0358	mg/L	U	0.00063	0.15000	0.00002
ViewB2	100/300 Areas RCBRA	6/11/2007	J116H7	2/2/2006	Grab	100 N	STRONTIUM SITE 9	1		Arsenic	0.0358	mg/L	U	0.00063	0.15000	0.00002

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB2	100/300 Areas RCBRA	6/11/2007	J116H8	2/2/2006	Grab	100 N	STRONTIUM SITE 2	1		Arsenic	0.0358	mg/L	U	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W973	9/10/1999	Discrete	Columbia River	100 N-1 HRM 9.5	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0W978	9/10/1999	Discrete	Columbia River	100 N-10 HRM 9.5	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WNX6	10/25/1999		Columbia River	100-N SPRING 8-13	1	SEEP	Arsenic	0.0022	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP37	10/25/1999		Columbia River	100-N SPRING 8-13	1	SEEP	Arsenic	0.0022	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP40	10/27/1999		Columbia River	100-D SPRING 110-1	1	SEEP	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP41	10/27/1999		Columbia River	100-D SPRING 110-1	1	SEEP	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP42	10/27/1999		Columbia River	100-D SPRING 102-1	1	SEEP	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP43	10/27/1999		Columbia River	100-D SPRING 102-1	1	SEEP	Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10904	10/17/2000	Discrete	Columbia River	100-N SPRING 8-13	1	SEEP	Arsenic	0.0029	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10957	10/17/2000	Discrete	Columbia River	100-N SPRING 8-13	1	SEEP	Arsenic	0.0029	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10960	10/17/2000	Discrete	Columbia River	100-D SPRING 110-1	1	SEEP	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10961	10/17/2000	Discrete	Columbia River	100-D SPRING 110-1	1	SEEP	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10962	10/17/2000	Discrete	Columbia River	100-D SPRING 102-1	1	SEEP	Arsenic	0.0012	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10963	10/17/2000	Discrete	Columbia River	100-D SPRING 102-1	1	SEEP	Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W32	5/6/2001	Discrete	Columbia River	100-N SPRING 8-13	1	Seep	Arsenic	0.0037	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W62	5/4/2001	Discrete	Columbia River	100-K SPRING 82-2	1	Seep	Arsenic	0.0021	mg/L		0.00063	0.15000	0.00002

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W63	5/4/2001	Discrete	Columbia River	100-K SPRING 82-2	1	Seep	Arsenic	0.0021	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W66	5/6/2001	Discrete	Columbia River	100-N SPRING 8-13	1	Seep	Arsenic	0.0034	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W69	5/4/2001	Discrete	Columbia River	100-D SPRING 110-1	1	Seep	Arsenic	0.0016	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W70	5/4/2001	Discrete	Columbia River	100-D SPRING 110-1	1	Seep	Arsenic	0.0013	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T64	9/7/2001	Discrete	Columbia River	100 N-1 HRM 9.5	1	coordinates estimated	Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T65	9/7/2001	Discrete	Columbia River	100 N-2 HRM 9.5	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T66	9/7/2001	Discrete	Columbia River	100 N-3 HRM 9.5	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T67	9/7/2001	Discrete	Columbia River	100 N-5 HRM 9.5	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T68	9/7/2001	Discrete	Columbia River	100 N-7 HRM 9.5	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T69	9/7/2001	Discrete	Columbia River	100 N-10 HRM 9.5	1	coordinates estimated	Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TJ0	9/7/2001	Discrete	Columbia River	100 N-1 HRM 9.5	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TJ1	9/7/2001	Discrete	Columbia River	100 N-2 HRM 9.5	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TJ2	9/7/2001	Discrete	Columbia River	100 N-3 HRM 9.5	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TJ3	9/7/2001	Discrete	Columbia River	100 N-5 HRM 9.5	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TJ4	9/7/2001	Discrete	Columbia River	100 N-7 HRM 9.5	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TJ5	9/7/2001	Discrete	Columbia River	100 N-10 HRM 9.5	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TN3	9/7/2001	Discrete	Columbia River	100 N Shore HRM 8.4	1	coordinates estimated	Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TN4	9/7/2001	Discrete	Columbia River	100 N Shore HRM 8.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TN6	9/7/2001	Discrete	Columbia River	100 N Shore HRM 8.9	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TN7	9/7/2001	Discrete	Columbia River	100 N Shore HRM 8.9	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TN9	9/7/2001	Discrete	Columbia River	100 N Shore HRM 9.2	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TP0	9/7/2001	Discrete	Columbia River	100 N Shore HRM 9.2	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TP2	9/7/2001	Discrete	Columbia River	100 N Shore HRM 9.8	1	coordinates estimated	Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TP3	9/7/2001	Discrete	Columbia River	100 N Shore HRM 9.8	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12X65	10/25/2001	Discrete	Columbia River	100-N SPRING 199N-46	1	Seep	Arsenic	0.0017	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12X66	10/25/2001	Discrete	Columbia River	100-N SPRING 199N-46	1	Seep	Arsenic	0.0014	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158D2	9/5/2002	Discrete	Columbia River	100 N-1 HRM 9.5	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158D3	9/5/2002	Discrete	Columbia River	100 N-2 HRM 9.5	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158D5	9/5/2002	Discrete	Columbia River	100 N-5 HRM 9.5	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158D7	9/5/2002	Discrete	Columbia River	100 N-10 HRM 9.5	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158W9	9/5/2002	Discrete	Columbia River	100 N Shore HRM 8.4	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158X3	9/5/2002	Discrete	Columbia River	100 N Shore HRM 8.9	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158X9	9/5/2002	Discrete	Columbia River	100 N Shore HRM 9.8	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C02	9/16/2002	Discrete	Columbia River	100-N SPRING 8-13	1	Seep	Arsenic	0.0034	mg/L		0.00063	0.15000	0.00002

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C83	9/16/2002	Discrete	Columbia River	100-N SPRING 8-13	1	Seep	Arsenic	0.0026	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C86	10/21/2002	Discrete	Columbia River	100-D SPRING 110-1	1	Seep	Arsenic	0.0023	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C87	10/21/2002	Discrete	Columbia River	100-D SPRING 110-1	1	Seep	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C88	10/21/2002	Discrete	Columbia River	100-D SPRING 102-1	1	Seep	Arsenic	0.0014	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C89	10/21/2002	Discrete	Columbia River	100-D SPRING 102-1	1	Seep	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17J17	10/20/2003	Discrete	Columbia River	100N SPRING 8-13	1	Seep	Arsenic	0.0024	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17J88	10/20/2003	Discrete	Columbia River	100N SPRING 8-13	1	Seep	Arsenic	0.0023	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17J93	10/27/2003	Discrete	Columbia River	100D SPRING 102-1	1	Seep	Arsenic	0.0010	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17J94	10/27/2003	Discrete	Columbia River	100D SPRING 102-1	1	coordinates estimated, Seep	Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6W9	9/13/2004	TRANSECT, RAW GRAB	Columbia River	100 N -1 HRM 9.5	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6X0	9/13/2004	TRANSECT, RAW GRAB	Columbia River	100 N -2 HRM 9.5	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6X1	9/13/2004	TRANSECT, RAW GRAB	Columbia River	100 N -3 HRM 9.5	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6X2	9/13/2004	TRANSECT, RAW GRAB	Columbia River	100 N -5 HRM 9.5	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6X3	9/13/2004	TRANSECT, RAW GRAB	Columbia River	100 N -7 HRM 9.5	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6X4	9/13/2004	TRANSECT, RAW GRAB	Columbia River	100 N -10 HRM 9.5	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B751	9/13/2004	TRANSECT, RAW GRAB	Columbia River	100 N -1 HRM 9.5	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B753	9/13/2004	TRANSECT, RAW GRAB	Columbia River	100 N -3 HRM 9.5	1		Arsenic	0.0006	mg/L	X	0.00063	0.15000	0.00002

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB2	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B754	9/13/2004	TRANSECT, RAW GRAB	Columbia River	100 N -5 HRM 9.5	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B755	9/13/2004	TRANSECT, RAW GRAB	Columbia River	100 N -7 HRM 9.5	1		Arsenic	0.0006	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B756	9/13/2004	TRANSECT, RAW GRAB	Columbia River	100 N -10 HRM 9.5	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B795	9/13/2004	TRANSECT, RAW GRAB	Columbia River	100 N SHORE HRM 8.4	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B796	9/13/2004	TRANSECT, RAW GRAB	Columbia River	100 N SHORE HRM 8.4	1		Arsenic	0.0006	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B799	9/13/2004	TRANSECT, RAW GRAB	Columbia River	100 N SHORE HRM 8.9	1		Arsenic	0.0006	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7B3	9/13/2004	TRANSECT, RAW GRAB	Columbia River	100 N SHORE HRM 9.2	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7B4	9/13/2004	TRANSECT, RAW GRAB	Columbia River	100 N SHORE HRM 9.2	1		Arsenic	0.0006	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7B7	9/13/2004	TRANSECT, RAW GRAB	Columbia River	100 N SHORE HRM 9.8	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7B8	9/13/2004	TRANSECT, RAW GRAB	Columbia River	100 N SHORE HRM 9.8	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFM0	10/11/2004	UNFILTERED, RAW GRAB	Columbia River	100-N SPRING 8-13	1		Arsenic	0.0024	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFW7	10/11/2004	RAW GRAB	Columbia River	100-N SPRING 8-13	1		Arsenic	0.0022	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFX2	10/26/2004	UNFILTERED, RAW GRAB	Columbia River	100-D SPRING 102-1	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFX3	10/26/2004	RAW GRAB	Columbia River	100-D SPRING 102-1	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F5F2	11/15/2005	UNFILTERED, RAW GRAB	Columbia River	100-N SPRING 8-13	1		Arsenic	0.0035	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F5L3	11/10/2005	UNFILTERED, RAW GRAB	Columbia River	100-K SPRING 77-1	1		Arsenic	0.0012	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F5L5	11/15/2005	RAW GRAB	Columbia River	100-N SPRING 8-13	1		Arsenic	0.0015	mg/L	X	0.00063	0.15000	0.00002

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F5L8	11/14/2005	UNFILTERED, RAW GRAB	Columbia River	100-D SPRING 110-1	1		Arsenic	0.0064	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F5L9	11/14/2005	RAW GRAB	Columbia River	100-D SPRING 110-1	1		Arsenic	0.0025	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F5M0	11/15/2005	UNFILTERED, RAW GRAB	Columbia River	100-D SPRING 102-1	1		Arsenic	0.0026	mg/L	X	0.00063	0.15000	0.00002
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F5M1	11/15/2005	RAW GRAB	Columbia River	100-D SPRING 102-1	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB2	100-NR-2 STUDY AREA ECOLOGICAL RISK ASSESSMENT SAMPLING AND ANALYSIS PLAN	1/1/2005	B18XL7	3/29/2004	Discrete	Columbia River	100-N SPRING 8-13	1	DUP IS SAMPLE B18XM0	Barium	0.0443	mg/L	X	0.02684	0.00400	1.00000
ViewB2	100-NR-2 STUDY AREA ECOLOGICAL RISK ASSESSMENT SAMPLING AND ANALYSIS PLAN	1/1/2005	B18XM0	3/29/2004	Discrete	Columbia River	100-N SPRING 8-13	1	DUP SAMPLE FOR B18XL7 coordinates estimated	Barium	0.0451	mg/L	X	0.02684	0.00400	1.00000
ViewB2	100/300 Areas RCBRA	6/11/2007	J11238	1/29/2006	Grab	100 K	CHROMIUM SITE 3	1		Barium	0.0271	mg/L	NA	0.02684	0.00400	1.00000
ViewB2	100/300 Areas RCBRA	6/11/2007	J11239	1/29/2006	Grab	100 K	CHROMIUM SITE 4	1		Barium	0.0278	mg/L	NA	0.02684	0.00400	1.00000
ViewB2	100/300 Areas RCBRA	6/11/2007	J11279	1/29/2006	Grab	100 D	CHROMIUM SITE 5	1		Barium	0.0278	mg/L	NA	0.02684	0.00400	1.00000
ViewB2	100/300 Areas RCBRA	6/11/2007	J112F7	2/6/2006	Grab	100 D	CHROMIUM SITE 8	1		Barium	0.0269	mg/L	NA	0.02684	0.00400	1.00000
ViewB2	100/300 Areas RCBRA	6/11/2007	J112F6	2/1/2006	Grab	100 D	CHROMIUM SITE 7	1		Barium	0.0270	mg/L	NA	0.02684	0.00400	1.00000
ViewB2	100/300 Areas RCBRA	6/11/2007	J112F9	2/1/2006	Grab	100 D	CHROMIUM SITE 10	1		Barium	0.0272	mg/L	NA	0.02684	0.00400	1.00000
ViewB2	100/300 Areas RCBRA	6/11/2007	J112X9	2/1/2006	Grab	100 D	CHROMIUM SITE 6	1		Barium	0.0272	mg/L	NA	0.02684	0.00400	1.00000
ViewB2	100/300 Areas RCBRA	6/11/2007	J116F9	2/3/2006	Grab	100 N	STRONTIUM SITE 6	1		Barium	0.0270	mg/L	NA	0.02684	0.00400	1.00000
ViewB2	100/300 Areas RCBRA	6/11/2007	J116H0	2/3/2006	Grab	100 N	STRONTIUM SITE 1	1		Barium	0.0274	mg/L	NA	0.02684	0.00400	1.00000
ViewB2	100/300 Areas RCBRA	6/11/2007	J116H1	2/3/2006	Grab	100 N	STRONTIUM SITE 10	1		Barium	0.0280	mg/L	NA	0.02684	0.00400	1.00000

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB2	100/300 Areas RCBRA	6/11/2007	J116H3	2/2/2006	Grab	100 N	STRONTIUM SITE 3	1		Barium	0.0275	mg/L	NA	0.02684	0.00400	1.00000
ViewB2	100/300 Areas RCBRA	6/11/2007	J116H5	2/2/2006	Grab	100 N	STRONTIUM SITE 4	1		Barium	0.0273	mg/L	NA	0.02684	0.00400	1.00000
ViewB2	100/300 Areas RCBRA	6/11/2007	J116H6	2/3/2006	Grab	100 N	STRONTIUM SITE 5	1		Barium	0.0275	mg/L	NA	0.02684	0.00400	1.00000
ViewB2	100/300 Areas RCBRA	6/11/2007	J116H7	2/2/2006	Grab	100 N	STRONTIUM SITE 9	1		Barium	0.0275	mg/L	NA	0.02684	0.00400	1.00000
ViewB2	100/300 Areas RCBRA	6/11/2007	J116H8	2/2/2006	Grab	100 N	STRONTIUM SITE 2	1		Barium	0.0272	mg/L	NA	0.02684	0.00400	1.00000
ViewB2	100-NR-2 STUDY AREA ECOLOGICAL RISK ASSESSMENT SAMPLING AND ANALYSIS PLAN	1/1/2005	B1BC57	9/25/2004	Discrete	Columbia River	Hanford Reach - 100-N Area	1	coordinates estimated	Barium	0.0278	mg/L	X	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JP7	10/17/2000	Discrete	Columbia River	100-D SPRING 102-1	1	SEEP	Barium	0.0537	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JP8	10/17/2000	Discrete	Columbia River	100-D SPRING 110-1	1	SEEP	Barium	0.0405	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JP9	10/17/2000	Discrete	Columbia River	100-D SPRING 110-1	1	SEEP	Barium	0.0402	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JR0	10/17/2000	Discrete	Columbia River	SD-110-2	1	SEEP	Barium	0.0342	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JR1	10/12/2000	Discrete	Columbia River	SD-98-1	1	SEEP	Barium	0.0363	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JR8	10/17/2000	Discrete	Columbia River	100-D SPRING 102-1	1	SEEP	Barium	0.0518	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JR9	10/17/2000	Discrete	Columbia River	100-D SPRING 110-1	1	SEEP	Barium	0.0402	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JT0	10/17/2000	Discrete	Columbia River	100-D SPRING 110-1	1	SEEP	Barium	0.0403	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JT1	10/17/2000	Discrete	Columbia River	SD-110-2	1	SEEP	Barium	0.0360	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JT2	10/12/2000	Discrete	Columbia River	SD-98-1	1	SEEP	Barium	0.0317	mg/L	B	0.02684	0.00400	1.00000

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JT9	10/12/2000	Discrete	Columbia River	SD-98-1	1	SEEP	Barium	0.0673	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JV0	10/12/2000	Discrete	Columbia River	SD-98-1	1	SEEP	Barium	0.0312	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B135X2	10/25/2001		Columbia River	100-D SPRING 98-1	1	SD-98-1, Seep	Barium	0.0320	mg/L		0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B135X3	10/25/2001		Columbia River	100-D SPRING 98-1	1	SD-98-1, Seep	Barium	0.0658	mg/L		0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13600	10/25/2001		Columbia River	100-K SPRING 77-1	1	SK-077-1, Seep	Barium	0.0276	mg/L		0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13604	10/25/2001		Columbia River	100-K SPRING 82-2	1	SK-082-2, Seep	Barium	0.0451	mg/L		0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13605	10/25/2001		Columbia River	100-K SPRING 82-2	1	SK-082-2, Seep	Barium	0.0479	mg/L		0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HV8	10/21/2002	Discrete	Columbia River	100-D SPRING 102-1	1	Seep	Barium	0.0455	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HV9	10/21/2002	Discrete	Columbia River	100-D SPRING 102-1	1	Seep	Barium	0.0362	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HW1	10/21/2002	Discrete	Columbia River	100-D SPRING 110-1	1	Seep	Barium	0.2920	mg/L		0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HW2	10/21/2002	Discrete	Columbia River	100-D SPRING 110-1	1	Seep	Barium	0.0753	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HW4	10/21/2002	Discrete	Columbia River	100-D SPRING 110-1	1	Seep	Barium	0.1540	mg/L		0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HW5	10/21/2002	Discrete	Columbia River	100-D SPRING 110-1	1	Seep	Barium	0.0787	mg/L		0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HW9	10/21/2002	Discrete	Columbia River	100-D SPRING 98-1	1	Seep	Barium	0.0319	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HX0	10/21/2002	Discrete	Columbia River	100-D SPRING 98-1	1	Seep	Barium	0.0293	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15LM4	10/21/2002	Discrete	Columbia River	100-K SPRING 77-1	1	Seep	Barium	0.0360	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15LM7	10/21/2002	Discrete	Columbia River	100-K SPRING 82-2	1	Seep	Barium	0.0441	mg/L	B	0.02684	0.00400	1.00000

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15LM8	10/21/2002	Discrete	Columbia River	100-K SPRING 82-2	1	Seep	Barium	0.0444	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17JP0	10/27/2003	Discrete	Columbia River	100-D SPRING 102-1	1	Seep	Barium	0.0291	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17JN8	10/27/2003	Discrete	Columbia River	100-D SPRING 102-1	1	Seep	Barium	0.0297	mg/L		0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17JN9	10/27/2003	Discrete	Columbia River	100-D SPRING 102-1	1	Seep	Barium	0.0283	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17JP2	10/27/2003	Discrete	Columbia River	100-D SPRING 102-1	1	Seep	Barium	0.0540	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17JP3	10/27/2003	Discrete	Columbia River	100-D SPRING 102-1	1	Seep	Barium	0.0498	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7N7	11/15/2005		Columbia River	100-D SPRING 102-1	1	100-D SPRING 102-1	Barium	0.1510	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7N8	11/15/2005		Columbia River	100-D SPRING 102-1	1	100-D SPRING 102-1	Barium	0.0717	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7P1	11/14/2005		Columbia River	100-D SPRING 110-1	1	100-D SPRING 110-1	Barium	0.0388	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7P2	11/14/2005		Columbia River	100-D SPRING 110-1	1	100-D SPRING 110-1	Barium	0.0313	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7Y0	11/10/2005		Columbia River	100-K SPRING 82-2	1	SK-082-2	Barium	0.0525	mg/L	B	0.02684	0.00400	1.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7Y1	11/10/2005		Columbia River	100-K SPRING 82-2	1	SK-082-2	Barium	0.0398	mg/L	B	0.02684	0.00400	1.00000
ViewB2	100/300 Areas RCBRA	6/11/2007	J112X9	2/1/2006	Grab	100 D	CHROMIUM SITE 6	1		Boron	0.0123	mg/L	NA	0.01172	0.00160	0.00000
ViewB2	100/300 Areas RCBRA	6/11/2007	J112Y0	2/6/2006	Grab	100 N	STRONTIUM SITE 8	1		Boron	0.0160	mg/L	NA	0.01172	0.00160	0.00000
ViewB2	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP42	10/27/1999		Columbia River	100-D SPRING 102-1	1	SEEP	Chromium	0.1536	mg/L		0.00019	0.07400	0.10950
ViewB2	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP43	10/27/1999		Columbia River	100-D SPRING 102-1	1	SEEP	Chromium	0.1529	mg/L		0.00019	0.07400	0.10950
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10960	10/17/2000	Discrete	Columbia River	100-D SPRING 110-1	1	SEEP	Chromium	0.0848	mg/L		0.00019	0.07400	0.10950

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ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10961	10/17/2000	Discrete	Columbia River	100-D SPRING 110-1	1	SEEP	Chromium	0.0834	mg/L		0.00019	0.07400	0.10950
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10962	10/17/2000	Discrete	Columbia River	100-D SPRING 102-1	1	SEEP	Chromium	0.1510	mg/L		0.00019	0.07400	0.10950
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10963	10/17/2000	Discrete	Columbia River	100-D SPRING 102-1	1	SEEP	Chromium	0.1500	mg/L		0.00019	0.07400	0.10950
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JP7	10/17/2000	Discrete	Columbia River	100-D SPRING 102-1	1	SEEP	Chromium	0.1620	mg/L		0.00019	0.07400	0.10950
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JP8	10/17/2000	Discrete	Columbia River	100-D SPRING 110-1	1	SEEP	Chromium	0.0876	mg/L		0.00019	0.07400	0.10950
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JP9	10/17/2000	Discrete	Columbia River	100-D SPRING 110-1	1	SEEP	Chromium	0.0872	mg/L		0.00019	0.07400	0.10950
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JR8	10/17/2000	Discrete	Columbia River	100-D SPRING 102-1	1	SEEP	Chromium	0.1600	mg/L		0.00019	0.07400	0.10950
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JR9	10/17/2000	Discrete	Columbia River	100-D SPRING 110-1	1	SEEP	Chromium	0.0885	mg/L		0.00019	0.07400	0.10950
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JT0	10/17/2000	Discrete	Columbia River	100-D SPRING 110-1	1	SEEP	Chromium	0.0889	mg/L		0.00019	0.07400	0.10950
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W62	5/4/2001	Discrete	Columbia River	100-K SPRING 82-2	1	Seep	Chromium	0.0927	mg/L		0.00019	0.07400	0.10950
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W63	5/4/2001	Discrete	Columbia River	100-K SPRING 82-2	1	Seep	Chromium	0.0817	mg/L		0.00019	0.07400	0.10950
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W69	5/4/2001	Discrete	Columbia River	100-D SPRING 110-1	1	Seep	Chromium	0.1740	mg/L		0.00019	0.07400	0.10950
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W70	5/4/2001	Discrete	Columbia River	100-D SPRING 110-1	1	Seep	Chromium	0.1430	mg/L		0.00019	0.07400	0.10950
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C86	10/21/2002	Discrete	Columbia River	100-D SPRING 110-1	1	Seep	Chromium	0.1860	mg/L		0.00019	0.07400	0.10950
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C87	10/21/2002	Discrete	Columbia River	100-D SPRING 110-1	1	Seep	Chromium	0.1480	mg/L		0.00019	0.07400	0.10950
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HW1	10/21/2002	Discrete	Columbia River	100-D SPRING 110-1	1	Seep	Chromium	0.2180	mg/L		0.00019	0.07400	0.10950
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HW2	10/21/2002	Discrete	Columbia River	100-D SPRING 110-1	1	Seep	Chromium	0.1510	mg/L		0.00019	0.07400	0.10950

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HW4	10/21/2002	Discrete	Columbia River	100-D SPRING 110-1	1	Seep	Chromium	0.1830	mg/L		0.00019	0.07400	0.10950
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HW5	10/21/2002	Discrete	Columbia River	100-D SPRING 110-1	1	Seep	Chromium	0.1560	mg/L		0.00019	0.07400	0.10950
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1HLF3	11/15/2005		Columbia River	100-D SPRING 102-1	1	102-1	Hexavalent Chromium	0.0570	mg/L		0.00136	0.01000	0.10950
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JR1	10/12/2000	Discrete	Columbia River	SD-98-1	1	SEEP	Iron	0.4150	mg/L		0.02420	1.00000	0.30000
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JT9	10/12/2000	Discrete	Columbia River	SD-98-1	1	SEEP	Iron	2.6800	mg/L		0.02420	1.00000	0.30000
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B135X3	10/25/2001		Columbia River	100-D SPRING 98-1	1	SD-98-1, Seep	Iron	4.4100	mg/L		0.02420	1.00000	0.30000
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13605	10/25/2001		Columbia River	100-K SPRING 82-2	1	SK-082-2, Seep	Iron	0.3830	mg/L		0.02420	1.00000	0.30000
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HV8	10/21/2002	Discrete	Columbia River	100-D SPRING 102-1	1	Seep	Iron	0.6350	mg/L		0.02420	1.00000	0.30000
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HW1	10/21/2002	Discrete	Columbia River	100-D SPRING 110-1	1	Seep	Iron	20.4000	mg/L		0.02420	1.00000	0.30000
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HW4	10/21/2002	Discrete	Columbia River	100-D SPRING 110-1	1	Seep	Iron	8.3200	mg/L		0.02420	1.00000	0.30000
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15LM4	10/21/2002	Discrete	Columbia River	100-K SPRING 77-1	1	Seep	Iron	0.4680	mg/L		0.02420	1.00000	0.30000
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7N7	11/15/2005		Columbia River	100-D SPRING 102-1	1	100-D SPRING 102-1	Iron	4.8000	mg/L		0.02420	1.00000	0.30000
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7P1	11/14/2005		Columbia River	100-D SPRING 110-1	1	100-D SPRING 110-1	Iron	0.4690	mg/L		0.02420	1.00000	0.30000
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7Y0	11/10/2005		Columbia River	100-K SPRING 82-2	1	SK-082-2	Iron	0.9050	mg/L		0.02420	1.00000	0.30000
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JT9	10/12/2000	Discrete	Columbia River	SD-98-1	1	SEEP	Manganese	0.1770	mg/L		0.00197	0.12000	0.05000
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B135X3	10/25/2001		Columbia River	100-D SPRING 98-1	1	SD-98-1, Seep	Manganese	0.2570	mg/L		0.00197	0.12000	0.05000
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HV8	10/21/2002	Discrete	Columbia River	100-D SPRING 102-1	1	Seep	Manganese	0.0560	mg/L		0.00197	0.12000	0.05000

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HW1	10/21/2002	Discrete	Columbia River	100-D SPRING 110-1	1	Seep	Manganese	0.9350	mg/L		0.00197	0.12000	0.05000
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HW4	10/21/2002	Discrete	Columbia River	100-D SPRING 110-1	1	Seep	Manganese	0.3420	mg/L		0.00197	0.12000	0.05000
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15LM4	10/21/2002	Discrete	Columbia River	100-K SPRING 77-1	1	Seep	Manganese	0.0664	mg/L		0.00197	0.12000	0.05000
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7N7	11/15/2005		Columbia River	100-D SPRING 102-1	1	100-D SPRING 102-1	Manganese	0.3640	mg/L		0.00197	0.12000	0.05000
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7Y0	11/10/2005		Columbia River	100-K SPRING 82-2	1	SK-082-2	Manganese	0.0562	mg/L		0.00197	0.12000	0.05000
ViewB2	100/300 Areas RCBRA	6/11/2007	J11238	1/29/2006	Grab	100 K	CHROMIUM SITE 3	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewB2	100/300 Areas RCBRA	6/11/2007	J11239	1/29/2006	Grab	100 K	CHROMIUM SITE 4	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewB2	100/300 Areas RCBRA	6/11/2007	J11279	1/29/2006	Grab	100 D	CHROMIUM SITE 5	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewB2	100/300 Areas RCBRA	6/11/2007	J112F7	2/6/2006	Grab	100 D	CHROMIUM SITE 8	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewB2	100/300 Areas RCBRA	6/11/2007	J112Y0	2/6/2006	Grab	100 N	STRONTIUM SITE 8	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewB2	100/300 Areas RCBRA	6/11/2007	J11280	2/6/2006	Grab	100 D	CHROMIUM SITE 8	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewB2	100/300 Areas RCBRA	6/11/2007	J112F6	2/1/2006	Grab	100 D	CHROMIUM SITE 7	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewB2	100/300 Areas RCBRA	6/11/2007	J112F8	2/6/2006	Grab	100 D	CHROMIUM SITE 9	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewB2	100/300 Areas RCBRA	6/11/2007	J112F9	2/1/2006	Grab	100 D	CHROMIUM SITE 10	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewB2	100/300 Areas RCBRA	6/11/2007	J112X9	2/1/2006	Grab	100 D	CHROMIUM SITE 6	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewB2	100/300 Areas RCBRA	6/11/2007	J116F9	2/3/2006	Grab	100 N	STRONTIUM SITE 6	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewB2	100/300 Areas RCBRA	6/11/2007	J116H0	2/3/2006	Grab	100 N	STRONTIUM SITE 1	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB2	100/300 Areas RCBRA	6/11/2007	J116H1	2/3/2006	Grab	100 N	STRONTIUM SITE 10	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewB2	100/300 Areas RCBRA	6/11/2007	J116H3	2/2/2006	Grab	100 N	STRONTIUM SITE 3	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewB2	100/300 Areas RCBRA	6/11/2007	J116H4	2/2/2006	Grab	100 N	STRONTIUM SITE 7	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewB2	100/300 Areas RCBRA	6/11/2007	J116H5	2/2/2006	Grab	100 N	STRONTIUM SITE 4	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewB2	100/300 Areas RCBRA	6/11/2007	J116H6	2/3/2006	Grab	100 N	STRONTIUM SITE 5	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewB2	100/300 Areas RCBRA	6/11/2007	J116H7	2/2/2006	Grab	100 N	STRONTIUM SITE 9	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewB2	100/300 Areas RCBRA	6/11/2007	J116H8	2/2/2006	Grab	100 N	STRONTIUM SITE 2	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10FC0	11/7/2000	Discrete	Columbia River	SF-190-4	1	SEEP	Aluminum	0.0899	mg/L	U	0.02325	0.08700	36.49867
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JR3	11/1/2000	Discrete	Columbia River	100-H SPRING 145-1	1	SEEP	Aluminum	0.0899	mg/L	U	0.02325	0.08700	36.49867
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JR5	11/1/2000	Discrete	Columbia River	SH-150-1	1	SEEP	Aluminum	0.0899	mg/L	U	0.02325	0.08700	36.49867
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JR7	11/1/2000	Discrete	Columbia River	SH-153-1	1	SEEP	Aluminum	0.0899	mg/L	U	0.02325	0.08700	36.49867
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JT4	11/1/2000	Discrete	Columbia River	100-H SPRING 145-1	1	SEEP	Aluminum	0.0899	mg/L	U	0.02325	0.08700	36.49867
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JT6	11/1/2000	Discrete	Columbia River	SH-150-1	1	SEEP	Aluminum	0.0899	mg/L	U	0.02325	0.08700	36.49867
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JT8	11/1/2000	Discrete	Columbia River	SH-153-1	1	SEEP	Aluminum	0.0899	mg/L	U	0.02325	0.08700	36.49867
ViewB3	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HY1	10/27/2002	Discrete	Columbia River	100-H SPRING 150-1	1	Seep	Aluminum	0.2780	mg/L		0.02325	0.08700	36.49867
ViewB3	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HY4	10/27/2002	Discrete	Columbia River	100-H SPRING 152-2	1	Seep	Aluminum	0.2800	mg/L		0.02325	0.08700	36.49867
ViewB3	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17VK5	11/20/2003	Discrete	Columbia River	100-H SPRING 150-1	1	Seep	Aluminum	2.1200	mg/L		0.02325	0.08700	36.49867

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7T4	11/14/2005		Columbia River	SH-144-1	1	SH-144-1	Aluminum	1.8900	mg/L	C	0.02325	0.08700	36.49867
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7T5	11/14/2005		Columbia River	SH-144-1	1	SH-144-1	Aluminum	0.1070	mg/L	BC	0.02325	0.08700	36.49867
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7T8	11/14/2005		Columbia River	100-H SPRING 145-1	1	SH-145-1	Aluminum	1.0900	mg/L	C	0.02325	0.08700	36.49867
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7T9	11/14/2005		Columbia River	100-H SPRING 145-1	1	SH-145-1	Aluminum	0.1060	mg/L	BC	0.02325	0.08700	36.49867
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7V2	11/14/2005		Columbia River	100-H SPRING 150-1	1	SH-150-1	Aluminum	0.1930	mg/L	BC	0.02325	0.08700	36.49867
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7V3	11/14/2005		Columbia River	100-H SPRING 150-1	1	SH-150-1	Aluminum	0.1070	mg/L	BC	0.02325	0.08700	36.49867
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7W0	11/15/2005		Columbia River	100-H SPRING 153-1	1	SH-153-1	Aluminum	0.3460	mg/L	C	0.02325	0.08700	36.49867
ViewB3	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP44	10/27/1999		Columbia River	100-H SPRING 153-1	1	SEEP	Arsenic	0.0011	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP46	10/27/1999		Columbia River	100-H SPRING 145-1	1	SEEP	Arsenic	0.0021	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP47	10/27/1999		Columbia River	100-H SPRING 145-1	1	SEEP	Arsenic	0.0020	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10964	11/1/2000	Discrete	Columbia River	100-H SPRING 145-1	1	SEEP	Arsenic	0.0025	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10965	11/1/2000	Discrete	Columbia River	100-H SPRING 145-1	1	SEEP	Arsenic	0.0018	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W73	4/30/2001	Discrete	Columbia River	100-H SPRING 145-1	1	Seep	Arsenic	0.0045	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W74	4/30/2001	Discrete	Columbia River	100-H SPRING 145-1	1	Seep	Arsenic	0.0030	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W87	4/30/2001	Discrete	Columbia River	100-H SPRING 153-1	1	Seep	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T54	9/10/2001	Discrete	Columbia River	100 F-10 HRM 19.0	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T70	9/10/2001	Discrete	Columbia River	100 F-1 HRM 19.0	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T71	9/10/2001	Discrete	Columbia River	100 F-2 HRM 19.0	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T72	9/10/2001	Discrete	Columbia River	100 F-3 HRM 19.0	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T73	9/10/2001	Discrete	Columbia River	100 F-5 HRM 19.0	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T74	9/10/2001	Discrete	Columbia River	100 F-7 HRM 19.0	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TL4	9/10/2001	Discrete	Columbia River	100 F-1 HRM 19.0	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TL5	9/10/2001	Discrete	Columbia River	100 F-2 HRM 19.0	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TL6	9/10/2001	Discrete	Columbia River	100 F-3 HRM 19.0	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TL7	9/10/2001	Discrete	Columbia River	100 F-5 HRM 19.0	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TL8	9/10/2001	Discrete	Columbia River	100 F-7 HRM 19.0	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TL9	9/10/2001	Discrete	Columbia River	100 F-10 HRM 19.0	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TT4	9/10/2001	Discrete	Columbia River	100 F Shore HRM 18	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TT5	9/10/2001	Discrete	Columbia River	100 F Shore HRM 18	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12X71	10/31/2002	Discrete	Columbia River	100-H SPRING 145-1	1	Seep	Arsenic	0.0029	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12X72	10/31/2002	Discrete	Columbia River	100-H SPRING 145-1	1	Seep	Arsenic	0.0029	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12X86	10/31/2002	Discrete	Columbia River	100-H SPRING 152-2	1	Seep	Arsenic	0.0019	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12X87	10/31/2002	Discrete	Columbia River	100-H SPRING 152-2	1	Seep	Arsenic	0.0021	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15CB4	10/27/2002	Discrete	Columbia River	100-H SPRING 152-2	1	Seep	Arsenic	0.0013	mg/L		0.00063	0.15000	0.00002

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB3	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15CB5	10/27/2002	Discrete	Columbia River	100-H SPRING 152-2	1	Seep	Arsenic	0.0015	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17RK5	10/10/2003	Discrete	Columbia River	100H SPRING 145-1	1	Seep	Arsenic	0.0085	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17RK6	10/27/2003	Discrete	Columbia River	100H SPRING 145-1	1	Seep	Arsenic	0.0029	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17RM0	10/27/2003	Discrete	Columbia River	100H SPRING 153-1	1	Seep	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6V9	9/14/2004	TRANSECT, RAW GRAB	Columbia River	100 F -10 HRM 19.0	1		Arsenic	0.0008	mg/L	X	0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6X5	9/14/2004	TRANSECT, RAW GRAB	Columbia River	100 F -1 HRM 19.0	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6X6	9/14/2004	TRANSECT, RAW GRAB	Columbia River	100 F -2 HRM 19.0	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6X7	9/14/2004	TRANSECT, RAW GRAB	Columbia River	100 F -3 HRM 19.0	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6X8	9/14/2004	TRANSECT, RAW GRAB	Columbia River	100 F -5 HRM 19.0	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6X9	9/14/2004	TRANSECT, RAW GRAB	Columbia River	100 F -7 HRM 19.0	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B775	9/14/2004	TRANSECT, RAW GRAB	Columbia River	100 F -1 HRM 19.0	1		Arsenic	0.0006	mg/L	X	0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B777	9/14/2004	TRANSECT, RAW GRAB	Columbia River	100 F -3 HRM 19.0	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B779	9/14/2004	TRANSECT, RAW GRAB	Columbia River	100 F -7 HRM 19.0	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B780	9/14/2004	TRANSECT, RAW GRAB	Columbia River	100 F -10 HRM 19.0	1		Arsenic	0.0008	mg/L	X	0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7D7	9/14/2004	TRANSECT, RAW GRAB	Columbia River	100 F SHORE HRM 18	1		Arsenic	0.0006	mg/L	X	0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7D8	9/14/2004	TRANSECT, RAW GRAB	Columbia River	100 F SHORE HRM 18	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFX4	10/26/2004	UNFILTERED, RAW GRAB	Columbia River	100-H SPRING 145-1	1		Arsenic	0.0021	mg/L	X	0.00063	0.15000	0.00002

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB3	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFX5	10/26/2004	RAW GRAB	Columbia River	100-H SPRING 145-1	1		Arsenic	0.0022	mg/L	X	0.00063	0.15000	0.00002
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JR2	10/13/2000	Discrete	Columbia River	SH-144-1	1	SEEP	Barium	0.0332	mg/L	B	0.02684	0.00400	1.00000
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JR5	11/1/2000	Discrete	Columbia River	SH-150-1	1	SEEP	Barium	0.0336	mg/L	B	0.02684	0.00400	1.00000
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JT3	10/13/2000	Discrete	Columbia River	SH-144-1	1	SEEP	Barium	0.0334	mg/L	B	0.02684	0.00400	1.00000
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JT6	11/1/2000	Discrete	Columbia River	SH-150-1	1	SEEP	Barium	0.0335	mg/L	B	0.02684	0.00400	1.00000
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B135X8	11/1/2001		Columbia River	100-H SPRING 145-1	1	SH-145-1, Seep	Barium	0.0300	mg/L		0.02684	0.00400	1.00000
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B135X9	11/1/2001		Columbia River	100-H SPRING 145-1	1	SH-145-1, Seep	Barium	0.0302	mg/L		0.02684	0.00400	1.00000
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13618	10/22/2001		Columbia River	100-F SPRING 207-1	1	SF-207-1, Seep	Barium	0.0572	mg/L	B	0.02684	0.00400	1.00000
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13621	10/22/2001		Columbia River	100-F SPRING 211-1	1	SF-211-1, Seep	Barium	0.0518	mg/L	B	0.02684	0.00400	1.00000
ViewB3	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HX5	10/27/2002	Discrete	Columbia River	100-H SPRING 145-1	1	Seep	Barium	0.0275	mg/L	B	0.02684	0.00400	1.00000
ViewB3	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HX8	10/27/2002	Discrete	Columbia River	100-H SPRING 145-1	1	Seep	Barium	0.0269	mg/L	B	0.02684	0.00400	1.00000
ViewB3	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HY1	10/27/2002	Discrete	Columbia River	100-H SPRING 150-1	1	Seep	Barium	0.0321	mg/L	B	0.02684	0.00400	1.00000
ViewB3	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HY2	10/27/2002	Discrete	Columbia River	100-H SPRING 150-1	1	Seep	Barium	0.0279	mg/L	B	0.02684	0.00400	1.00000
ViewB3	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15HY4	10/27/2002	Discrete	Columbia River	100-H SPRING 152-2	1	Seep	Barium	0.0283	mg/L	B	0.02684	0.00400	1.00000
ViewB3	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17LB2	11/20/2003	Discrete	Columbia River	100-F SPRING	1	Seep	Barium	0.0491	mg/L	B	0.02684	0.00400	1.00000
ViewB3	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17VK5	11/20/2003	Discrete	Columbia River	100-H SPRING 150-1	1	Seep	Barium	0.0529	mg/L	B	0.02684	0.00400	1.00000
ViewB3	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17VK6	11/20/2003	Discrete	Columbia River	100-H SPRING 150-1	1	Seep	Barium	0.0275	mg/L	B	0.02684	0.00400	1.00000

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7T4	11/14/2005		Columbia River	SH-144-1	1	SH-144-1	Barium	0.0643	mg/L	B	0.02684	0.00400	1.00000
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7T5	11/14/2005		Columbia River	SH-144-1	1	SH-144-1	Barium	0.0396	mg/L	B	0.02684	0.00400	1.00000
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7T8	11/14/2005		Columbia River	100-H SPRING 145-1	1	SH-145-1	Barium	0.0730	mg/L	B	0.02684	0.00400	1.00000
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7T9	11/14/2005		Columbia River	100-H SPRING 145-1	1	SH-145-1	Barium	0.0602	mg/L	B	0.02684	0.00400	1.00000
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7V2	11/14/2005		Columbia River	100-H SPRING 150-1	1	SH-150-1	Barium	0.0846	mg/L	B	0.02684	0.00400	1.00000
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7V3	11/14/2005		Columbia River	100-H SPRING 150-1	1	SH-150-1	Barium	0.0840	mg/L	B	0.02684	0.00400	1.00000
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7W0	11/15/2005		Columbia River	100-H SPRING 153-1	1	SH-153-1	Barium	0.0307	mg/L	B	0.02684	0.00400	1.00000
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W73	4/30/2001	Discrete	Columbia River	100-H SPRING 145-1	1	Seep	Chromium	0.0985	mg/L		0.00019	0.07400	0.10950
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W74	4/30/2001	Discrete	Columbia River	100-H SPRING 145-1	1	Seep	Chromium	0.0875	mg/L		0.00019	0.07400	0.10950
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1HLF1	11/14/2005		Columbia River	SH-144-1	1	144-1	Hexavalent Chromium	0.0410	mg/L		0.00136	0.01000	0.10950
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1HLF2	11/14/2005		Columbia River	100-H SPRING 145-1	1	145-1	Hexavalent Chromium	0.0520	mg/L		0.00136	0.01000	0.10950
ViewB3	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17VK5	11/20/2003	Discrete	Columbia River	100-H SPRING 150-1	1	Seep	Iron	2.2400	mg/L		0.02420	1.00000	0.30000
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7T4	11/14/2005		Columbia River	SH-144-1	1	SH-144-1	Iron	1.7100	mg/L		0.02420	1.00000	0.30000
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7T8	11/14/2005		Columbia River	100-H SPRING 145-1	1	SH-145-1	Iron	1.0600	mg/L		0.02420	1.00000	0.30000
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7W0	11/15/2005		Columbia River	100-H SPRING 153-1	1	SH-153-1	Iron	0.4040	mg/L		0.02420	1.00000	0.30000
ViewB3	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17VK5	11/20/2003	Discrete	Columbia River	100-H SPRING 150-1	1	Seep	Manganese	0.0745	mg/L		0.00197	0.12000	0.05000
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7T4	11/14/2005		Columbia River	SH-144-1	1	SH-144-1	Manganese	0.1020	mg/L		0.00197	0.12000	0.05000

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB3	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7T8	11/14/2005		Columbia River	100-H SPRING 145-1	1	SH-145-1	Manganese	0.0561	mg/L		0.00197	0.12000	0.05000
ViewB4	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10FC3	11/7/2000	Discrete	Columbia River	100-F SPRING 207-1	1	SEEP	Aluminum	0.0899	mg/L	U	0.02325	0.08700	36.49867
ViewB4	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10FC6	11/7/2000	Discrete	Columbia River	SF-211-1	1	SEEP	Aluminum	0.0899	mg/L	U	0.02325	0.08700	36.49867
ViewB4	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP48	11/1/1999		Columbia River	100-F SPRING 207-1	1	SEEP	Arsenic	0.0028	mg/L		0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP49	11/1/1999		Columbia River	100-F SPRING 207-1	1	SEEP	Arsenic	0.0024	mg/L		0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10966	11/7/2000	Discrete	Columbia River	100-F SPRING 207-1	1	SEEP	Arsenic	0.0024	mg/L		0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10967	11/7/2000	Discrete	Columbia River	100-F SPRING 207-1	1	SEEP	Arsenic	0.0015	mg/L		0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W75	4/30/2001	Discrete	Columbia River	100-F SPRING 207-1	1	Seep	Arsenic	0.0027	mg/L		0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W76	4/30/2001	Discrete	Columbia River	100-F SPRING 207-1	1	Seep	Arsenic	0.0022	mg/L		0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TH0	9/10/2001	Discrete	Columbia River	Hanfrd Twnsite HRM 26	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TH3	9/10/2001	Discrete	Columbia River	Hanfrd Twnsite HRM 26	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TV0	9/10/2001	Discrete	Columbia River	100 F Shore HRM 23	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TV1	9/10/2001	Discrete	Columbia River	100 F Shore HRM 23	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12X73	10/22/2001	Discrete	Columbia River	100-F SPRING 207-1	1	Seep	Arsenic	0.0043	mg/L		0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12X74	10/22/2001	Discrete	Columbia River	100-F SPRING 207-1	1	Seep	Arsenic	0.0026	mg/L		0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158N6	9/9/2002	Discrete	Columbia River	Hanfrd Twnsite HRM 26	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158N9	9/9/2002	Discrete	Columbia River	Hanfrd Twnsite HRM 26	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002

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ViewB4	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C92	10/29/2002	Discrete	Columbia River	100-F SPRING 207-1	1	Seep	Arsenic	0.0029	mg/L		0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C93	10/29/2002	Discrete	Columbia River	100-F SPRING 207-1	1	Seep	Arsenic	0.0023	mg/L		0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17RK7	11/3/2003	Discrete	Columbia River	100F SPRING 207-1	1	Seep	Arsenic	0.0031	mg/L		0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17RK8	11/3/2003	Discrete	Columbia River	100F SPRING 207-1	1	Seep	Arsenic	0.0015	mg/L		0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7F2	9/14/2004	TRANSECT, RAW GRAB	Columbia River	100 F SHORE HRM 22	1	"LOW WATER, LIMITED ACCESS. COLLECTED HALFWAY BETWEEN HRM 23 AND 22."	Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7F5	9/14/2004	TRANSECT, RAW GRAB	Columbia River	100 F SHORE HRM 23	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B741	9/14/2004	TRANSECT, RAW GRAB	Columbia River	HANFRD TWNSITE HRM26	1		Arsenic	0.0006	mg/L	X	0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7F1	9/14/2004	TRANSECT, RAW GRAB	Columbia River	100 F SHORE HRM 22	1	"LOW WATER, LIMITED ACCESS. COLLECTED HALFWAY BETWEEN HRM 23 AND 22."	Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFX6	10/26/2004	UNFILTERED, RAW GRAB	Columbia River	100-F SPRING 207-1	1		Arsenic	0.0047	mg/L	X	0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFX7	10/26/2004	RAW GRAB	Columbia River	100-F SPRING 207-1	1		Arsenic	0.0014	mg/L	X	0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DM43	9/13/2005	TRANSECT, RAW GRAB	Columbia River	100 F SHORE HRM 22	1		Arsenic	0.0006	mg/L	X	0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F5M4	11/15/2005	UNFILTERED, RAW GRAB	Columbia River	100-F SPRING 207-1	1		Arsenic	0.0049	mg/L	X	0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F5M5	11/15/2005	RAW GRAB	Columbia River	100-F SPRING 207-1	1		Arsenic	0.0017	mg/L	X	0.00063	0.15000	0.00002
ViewB4	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10FC3	11/7/2000	Discrete	Columbia River	100-F SPRING 207-1	1	SEEP	Barium	0.0390	mg/L	B	0.02684	0.00400	1.00000
ViewB4	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10FC6	11/7/2000	Discrete	Columbia River	SF-211-1	1	SEEP	Barium	0.0517	mg/L	B	0.02684	0.00400	1.00000

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ViewB4	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15MN2	10/27/2002	Discrete	Columbia River	100-F SPRING 207-1	1	Seep	Barium	0.0488	mg/L	B	0.02684	0.00400	1.00000
ViewB4	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7T1	11/15/2005		Columbia River	100-F SPRING 207-1	1	SF-207-1	Barium	0.0547	mg/L	B	0.02684	0.00400	1.00000
ViewB4	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7R8	11/15/2005		Columbia River	100-F SPRING 207-1	1	SF-207-1	Hexavalent Chromium	0.0150	mg/L		0.00136	0.01000	0.10950
ViewC	100/300 Areas RCBRA	6/11/2007	J111B4	1/18/2006	Grab	300 AREA	URANIUM SITE 3	1		Aluminum	0.1020	mg/L	NA	0.02325	0.08700	36.49867
ViewC	100/300 Areas RCBRA	6/11/2007	J111N3	1/19/2006	Grab	300 AREA	URANIUM SITE 7	1		Aluminum	0.1060	mg/L	C	0.02325	0.08700	36.49867
ViewC	100/300 Areas RCBRA	6/11/2007	J111N6	1/24/2006	Grab	300 AREA	URANIUM SITE 10	1		Aluminum	0.2540	mg/L	NA	0.02325	0.08700	36.49867
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RL6	8/27/2001	Discrete	Columbia River	300 AREA SPRING 42-2	1	Seep	Aluminum	0.0884	mg/L		0.02325	0.08700	36.49867
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RP5	8/27/2001	Discrete	Columbia River	300 SPR 11 -1	1		Aluminum	0.1230	mg/L		0.02325	0.08700	36.49867
ViewC	100/300 Areas RCBRA	6/11/2007	J11126	1/16/2006	Grab	300 AREA	300-1 REFERENCE	1		Arsenic	0.0034	mg/L	U	0.00063	0.15000	0.00002
ViewC	100/300 Areas RCBRA	6/11/2007	J11127	1/16/2006	Grab	300 AREA	300-2 REFERENCE	1		Arsenic	0.0034	mg/L	U	0.00063	0.15000	0.00002
ViewC	100/300 Areas RCBRA	6/11/2007	J11128	1/17/2006	Grab	300 AREA	URANIUM SITE 1	1		Arsenic	0.0034	mg/L	U	0.00063	0.15000	0.00002
ViewC	100/300 Areas RCBRA	6/11/2007	J11129	1/17/2006	Grab	300 AREA	URANIUM SITE 2	1		Arsenic	0.0063	mg/L	NA	0.00063	0.15000	0.00002
ViewC	100/300 Areas RCBRA	6/11/2007	J11193	1/17/2006	Grab	300 AREA	URANIUM SITE 3	1		Arsenic	0.0053	mg/L	NA	0.00063	0.15000	0.00002
ViewC	100/300 Areas RCBRA	6/11/2007	J11194	1/18/2006	Grab	300 AREA	URANIUM SITE 4	1		Arsenic	0.0041	mg/L	NA	0.00063	0.15000	0.00002
ViewC	100/300 Areas RCBRA	6/11/2007	J111B4	1/18/2006	Grab	300 AREA	URANIUM SITE 3	1		Arsenic	0.0045	mg/L	NA	0.00063	0.15000	0.00002
ViewC	100/300 Areas RCBRA	6/11/2007	J111K8	1/19/2006	Grab	300 AREA	URANIUM SITE 5	1		Arsenic	0.0034	mg/L	U	0.00063	0.15000	0.00002
ViewC	100/300 Areas RCBRA	6/11/2007	J111N2	1/19/2006	Grab	300 AREA	URANIUM SITE 6	1		Arsenic	0.0034	mg/L	U	0.00063	0.15000	0.00002

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ViewC	100/300 Areas RCBRA	6/11/2007	J111N3	1/19/2006	Grab	300 AREA	URANIUM SITE 7	1		Arsenic	0.0034	mg/L	U	0.00063	0.15000	0.00002
ViewC	100/300 Areas RCBRA	6/11/2007	J111N4	1/22/2006	Grab	300 AREA	URANIUM SITE 8	1		Arsenic	0.0034	mg/L	U	0.00063	0.15000	0.00002
ViewC	100/300 Areas RCBRA	6/11/2007	J111N5	1/22/2006	Grab	300 AREA	URANIUM SITE 9	1		Arsenic	0.0034	mg/L	U	0.00063	0.15000	0.00002
ViewC	100/300 Areas RCBRA	6/11/2007	J111N6	1/24/2006	Grab	300 AREA	URANIUM SITE 10	1		Arsenic	0.0034	mg/L	U	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WB61	9/16/1999	Discrete	Columbia River	300 Area Sr HRM 41.5	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WB63	9/16/1999	Discrete	Columbia River	300 Area Sr HRM 42.5	1	coordinates estimated	Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WB64	9/16/1999	Discrete	Columbia River	300 Area Sr HRM 42.9	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WB87	9/16/1999	Discrete	Columbia River	300 Area-7 HRM 43.1	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WB88	9/16/1999	Discrete	Columbia River	300 Area-10 HRM 43.1	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WB91	9/21/1999	Discrete	Columbia River	Hanfrd TS-3 HRM 28.7	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WNX4	11/1/1999	Discrete	Columbia River	HANFORD SPRING 28-2	1	coordinates estimated	Arsenic	0.0049	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WNX5	11/1/1999		Columbia River	300 AREA SPRING 42-2	1	SEEP	Arsenic	0.0082	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP50	11/1/1999	Discrete	Columbia River	HANFORD SPRING 28-2	1	coordinates estimated	Arsenic	0.0048	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP51	11/1/1999	Discrete	Columbia River	HANFORD SPR UR 28-2	1	coordinates estimated	Arsenic	0.0040	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP52	11/1/1999	Discrete	Columbia River	HANFORD SPR UR 28-2	1	coordinates estimated	Arsenic	0.0039	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP53	11/1/1999	Discrete	Columbia River	HANFORD SPR DR 28-2	1	coordinates estimated	Arsenic	0.0046	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP54	11/1/1999	Discrete	Columbia River	HANFORD SPR DR 28-2	1	coordinates estimated	Arsenic	0.0043	mg/L		0.00063	0.15000	0.00002

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP55	11/1/1999		Columbia River	300 AREA SPRING 42-2	1	SEEP	Arsenic	0.0013	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP56	11/1/1999		Columbia River	300 AREA SPRING 42-2	1	SEEP	Arsenic	0.0014	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP57	11/1/1999		Columbia River	300 AREA SPRING 42-2	1	SEEP	Arsenic	0.0010	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YCL3	6/20/2000	Discrete	Columbia River	Rich.Pmphs HRM 43.9	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YCL4	6/20/2000	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106R8	9/19/2000	Discrete	Columbia River	300 Area-10 HRM 43.1	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10747	9/19/2000	Discrete	Columbia River	300 Area-7 HRM 43.1	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10748	9/19/2000	Discrete	Columbia River	300 Area-10 HRM 43.1	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10777	9/19/2000	Discrete	Columbia River	300 Area Sr HRM 42.1	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10778	9/19/2000	Discrete	Columbia River	300 Area Sr HRM 42.1	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10786	9/18/2000	Discrete	Columbia River	Hanfrd Twnsite HRM 28	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10787	9/18/2000	Discrete	Columbia River	Hanfrd Twnsite HRM 28	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10902	9/27/2000	Discrete	Columbia River	HANFORD SPRING 28-2	1	coordinates estimated	Arsenic	0.0034	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10903	9/27/2000	Discrete	Columbia River	300 AREA SPRING 42-2	1	SEEP	Arsenic	0.0040	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10968	9/27/2000	Discrete	Columbia River	HANFORD SPRING 28-2	1	coordinates estimated	Arsenic	0.0034	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10969	9/27/2000	Discrete	Columbia River	HANFORD SPR UR 28-2	1	coordinates estimated	Arsenic	0.0026	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10970	9/27/2000	Discrete	Columbia River	HANFORD SPR UR 28-2	1	coordinates estimated	Arsenic	0.0026	mg/L		0.00063	0.15000	0.00002

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10971	9/27/2000	Discrete	Columbia River	HANFORD SPR DR 28-2	1	coordinates estimated	Arsenic	0.0036	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10972	9/27/2000	Discrete	Columbia River	HANFORD SPR DR 28-2	1	coordinates estimated	Arsenic	0.0035	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10973	9/27/2000	Discrete	Columbia River	300 AREA SPRING 42-2	1	SEEP	Arsenic	0.0016	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10974	9/27/2000	Discrete	Columbia River	300 AREA SPR DR 42-2	1	SEEP	Arsenic	0.0010	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10975	9/27/2000	Discrete	Columbia River	300 AREA SPR DR 42-2	1	SEEP	Arsenic	0.0010	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W30	4/30/2001	Discrete	Columbia River	HANFORD SPRING 28-2	1	coordinates estimated	Arsenic	0.0048	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W31	5/10/2001	Discrete	Columbia River	300 AREA SPRING 42-2	1	Seep	Arsenic	0.0038	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W82	5/10/2001	Discrete	Columbia River	300 AREA SPRING 42-2	1	Seep	Arsenic	0.0029	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W83	5/3/2001	Discrete	Columbia River	300 AREA SPR DR 42-2	1	Seep	Arsenic	0.0010	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W77	4/30/2001	Discrete	Columbia River	HANFORD SPRING 28-2	1	coordinates estimated	Arsenic	0.0040	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W80	4/30/2001	Discrete	Columbia River	HANFORD SPR DR 28-2	1	coordinates estimated	Arsenic	0.0049	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W81	4/30/2001	Discrete	Columbia River	HANFORD SPR DR 28-2	1	coordinates estimated	Arsenic	0.0039	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W84	5/3/2001	Discrete	Columbia River	300 AREA SPR DR 42-2	1	Seep	Arsenic	0.0012	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12541	6/12/2001	Discrete	Columbia River	Rich.Pmphs HRM 43.9	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12542	6/12/2001	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RL6	8/27/2001	Discrete	Columbia River	300 AREA SPRING 42-2	1	Seep	Arsenic	0.0013	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RM8	8/27/2001	Discrete	Columbia River	300 AREA SPRING 42-2	1	Seep	Arsenic	0.0012	mg/L		0.00063	0.15000	0.00002

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RM9	8/27/2001	Discrete	Columbia River	300 AREA SPR DR 42-2	1	Seep	Arsenic	0.0012	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RN0	8/27/2001	Discrete	Columbia River	300 AREA SPR DR 42-2	1	Seep	Arsenic	0.0011	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RP1	8/27/2001	Discrete	Columbia River	300 SPR 9 -1	1		Arsenic	0.0012	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RP2	8/27/2001	Discrete	Columbia River	300 SPR 9 -1	1		Arsenic	0.0011	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RP5	8/27/2001	Discrete	Columbia River	300 SPR 11 -1	1		Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RP6	8/27/2001	Discrete	Columbia River	300 SPR 11 -1	1		Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T09	8/27/2001	Discrete	Columbia River	300 SPR 7 -1	1		Arsenic	0.0018	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T10	8/27/2001	Discrete	Columbia River	300 SPR 7 -1	1		Arsenic	0.0017	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T51	9/13/2001	Discrete	Columbia River	300 Area-5 HRM 43.1	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T52	9/13/2001	Discrete	Columbia River	300 Area-7 HRM 43.1	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T53	9/13/2001	Discrete	Columbia River	300 Area-10 HRM 43.1	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T55	9/10/2001	Discrete	Columbia River	Hanfrd TS-1 HRM 28.7	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T56	9/10/2001	Discrete	Columbia River	Hanfrd TS-2 HRM 28.7	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T57	9/10/2001	Discrete	Columbia River	Hanfrd TS-3 HRM 28.7	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T58	9/10/2001	Discrete	Columbia River	Hanfrd TS-5 HRM 28.7	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T59	9/10/2001	Discrete	Columbia River	Hanfrd TS-7 HRM 28.7	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T60	9/10/2001	Discrete	Columbia River	Hanfrd TS-10 HRM 28.7	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002

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ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T61	9/13/2001	Discrete	Columbia River	300 Area-1 HRM 43.1	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T62	9/13/2001	Discrete	Columbia River	300 Area-2 HRM 43.1	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T63	9/13/2001	Discrete	Columbia River	300 Area-3 HRM 43.1	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TH1	9/10/2001	Discrete	Columbia River	Hanfrd Twnsite HRM 27	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TH2	9/10/2001	Discrete	Columbia River	Hanfrd Twnsite HRM 30	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TH4	9/10/2001	Discrete	Columbia River	Hanfrd Twnsite HRM 27	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TH5	9/10/2001	Discrete	Columbia River	Hanfrd Twnsite HRM 30	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TK2	9/13/2001	Discrete	Columbia River	300 Area-1 HRM 43.1	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TK3	9/13/2001	Discrete	Columbia River	300 Area-2 HRM 43.1	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TK4	9/13/2001	Discrete	Columbia River	300 Area-3 HRM 43.1	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TK5	9/13/2001	Discrete	Columbia River	300 Area-5 HRM 43.1	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TK6	9/13/2001	Discrete	Columbia River	300 Area-7 HRM 43.1	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TK7	9/13/2001	Discrete	Columbia River	300 Area-10 HRM 43.1	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TK8	9/10/2001	Discrete	Columbia River	Hanfrd TS-1 HRM 28.7	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TK9	9/10/2001	Discrete	Columbia River	Hanfrd TS-2 HRM 28.7	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TL0	9/10/2001	Discrete	Columbia River	Hanfrd TS-3 HRM 28.7	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TL1	9/10/2001	Discrete	Columbia River	Hanfrd TS-5 HRM 28.7	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002

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ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TL2	9/10/2001	Discrete	Columbia River	Hanfrd TS-7 HRM 28.7	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TL3	9/10/2001	Discrete	Columbia River	Hanfrd TS-10 HRM 28.7	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TM6	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 43.9	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TM7	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TN0	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 43.9	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TN1	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TP6	9/13/2001	Discrete	Columbia River	300 Area Sr HRM 41.5	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TP7	9/13/2001	Discrete	Columbia River	300 Area Sr HRM 41.5	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TR0	9/13/2001	Discrete	Columbia River	300 Area Sr HRM 42.1	1	coordinates estimated	Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TR1	9/13/2001	Discrete	Columbia River	300 Area Sr HRM 42.1	1	coordinates estimated	Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TR4	9/13/2001	Discrete	Columbia River	300 Area Sr HRM 42.5	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TR5	9/13/2001	Discrete	Columbia River	300 Area Sr HRM 42.5	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TR8	9/13/2001	Discrete	Columbia River	300 Area Sr HRM 42.9	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TR9	9/13/2001	Discrete	Columbia River	300 Area Sr HRM 42.9	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TT1	9/10/2001	Discrete	Columbia River	Hanfrd Twnsite HRM 28	1	coordinates estimated	Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TT2	9/10/2001	Discrete	Columbia River	Hanfrd Twnsite HRM 28	1	coordinates estimated	Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13LK4	12/4/2001	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RY1	6/11/2002	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1	coordinates estimated	Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RY4	6/11/2002	Discrete	Columbia River	Rich.Pmphs HRM 43.9	1	coordinates estimated	Arsenic	0.0009	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RY5	6/11/2002	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1	coordinates estimated	Arsenic	0.0008	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158C1	9/10/2002	Discrete	Columbia River	300 Area-10 HRM 43.1	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158C3	9/9/2002	Discrete	Columbia River	Hanfrd TS-1 HRM 28.7	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158C6	9/9/2002	Discrete	Columbia River	Hanfrd TS-5 HRM 28.7	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158C7	9/9/2002	Discrete	Columbia River	Hanfrd TS-7 HRM 28.7	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158C8	9/9/2002	Discrete	Columbia River	Hanfrd TS-10 HRM 28.7	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158N7	9/9/2002	Discrete	Columbia River	Hanfrd Twnsite HRM 27	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158N8	9/9/2002	Discrete	Columbia River	Hanfrd Twnsite HRM 30	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158P0	9/9/2002	Discrete	Columbia River	Hanfrd Twnsite HRM 27	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158P1	9/9/2002	Discrete	Columbia River	Hanfrd Twnsite HRM 30	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158T3	9/10/2002	Discrete	Columbia River	300 Area-10 HRM 43.1	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158T4	9/9/2002	Discrete	Columbia River	Hanfrd TS-1 HRM 28.7	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158T5	9/9/2002	Discrete	Columbia River	Hanfrd TS-2 HRM 28.7	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158T9	9/9/2002	Discrete	Columbia River	Hanfrd TS-10 HRM 28.7	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15900	9/10/2002	Discrete	Columbia River	300 Area Sr HRM 42.9	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15904	9/9/2002	Discrete	Columbia River	Hanfrd Twnsite HRM 28	1	coordinates estimated	Arsenic	0.0015	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15905	9/9/2002	Discrete	Columbia River	Hanfrd Twnsite HRM 28	1	coordinates estimated	Arsenic	0.0016	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C00	10/7/2002	Discrete	Columbia River	HANFORD SPRING 28-2	1	coordinates estimated	Arsenic	0.0032	mg/L	C	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C01	10/7/2002	Discrete	Columbia River	300 AREA SPRING 42-2	1	Seep	Arsenic	0.0009	mg/L	C	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C94	10/7/2002	Discrete	Columbia River	HANFORD SPRING 28-2	1	coordinates estimated	Arsenic	0.0030	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C97	10/7/2002	Discrete	Columbia River	HANFORD SPR DR 28-2	1	coordinates estimated	Arsenic	0.0032	mg/L	C	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C98	10/7/2002	Discrete	Columbia River	HANFORD SPR DR 28-2	1	coordinates estimated	Arsenic	0.0032	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C99	10/7/2002	Discrete	Columbia River	300 AREA SPRING 42-2	1	Seep	Arsenic	0.0011	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WT0	5/14/2003	Discrete	Columbia River	Ringold Wasteway	1	coordinates estimated	Arsenic	0.0047	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WT1	5/14/2003	Discrete	Columbia River	Ringold Wasteway	1	coordinates estimated	Arsenic	0.0050	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WT2	5/14/2003	Discrete	Columbia River	Ringold Wasteway	1	coordinates estimated	Arsenic	0.0049	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WT3	5/14/2003	Discrete	Columbia River	Ringold Wasteway	1	coordinates estimated	Arsenic	0.0048	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WT4	5/14/2003	Discrete	Columbia River	Ringold Wasteway	1	coordinates estimated	Arsenic	0.0048	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WT5	5/14/2003	Discrete	Columbia River	Ringold Wasteway	1	coordinates estimated	Arsenic	0.0047	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17C97	9/8/2003	Discrete	Columbia River	Hanfrd TS-1 HRM 28.7	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17CL9	9/8/2003	Discrete	Columbia River	Hanfrd Twnsite HRM 30	1		Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17CN9	9/9/2003	Discrete	Columbia River	300 Area-1 HRM 43.1	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17CP3	9/9/2003	Discrete	Columbia River	300 Area-7 HRM 43.1	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17CP4	9/9/2003	Discrete	Columbia River	300 Area-10 HRM 43.1	1	coordinates estimated	Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17CP5	9/8/2003	Discrete	Columbia River	Hanfrd TS-1 HRM 28.7	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17CX2	9/9/2003	Discrete	Columbia River	300 Area Sr HRM 42.1	1		Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17CX6	9/9/2003	Discrete	Columbia River	300 Area Sr HRM 42.5	1		Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17CY2	9/8/2003	Discrete	Columbia River	Hanfrd Twnsite HRM 28	1		Arsenic	0.0014	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17CY3	9/8/2003	Discrete	Columbia River	Hanfrd Twnsite HRM 28	1		Arsenic	0.0014	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17RH8	10/13/2003	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	Arsenic	0.0019	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17RL0	11/3/2003	Discrete	Columbia River	HANFORD SPR UR 28-2	1	Seep	Arsenic	0.0026	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17RL1	11/3/2003	Discrete	Columbia River	HANFORD SPR UR 28-2	1	Seep	Arsenic	0.0025	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17RL2	11/3/2003	Discrete	Columbia River	HANFORD SPR DR 28-2	1	Seep	Arsenic	0.0039	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17RL3	11/3/2003	Discrete	Columbia River	HANFORD SPR DR 28-2	1	Seep	Arsenic	0.0037	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17RL4	10/13/2003	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	Arsenic	0.0016	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17RL5	10/13/2003	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	Arsenic	0.0014	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17RL6	10/13/2003	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	Arsenic	0.0013	mg/L		0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B19JC5	6/24/2004	UNFILTERED, RAW GRAB	Columbia River	300 AREA OUTFL13	1		Arsenic	0.0031	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B19JC6	6/24/2004	RAW GRAB	Columbia River	300 AREA OUTFL13	1		Arsenic	0.0030	mg/L	X	0.00063	0.15000	0.00002

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6V6	9/15/2004	TRANSECT, RAW GRAB	Columbia River	300 AREA -5 HRM 43.1	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6V7	9/15/2004	TRANSECT, RAW GRAB	Columbia River	300 AREA -7 HRM 43.1	1		Arsenic	0.0008	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6V8	9/15/2004	TRANSECT, RAW GRAB	Columbia River	300 AREA-10 HRM 43.1	1		Arsenic	0.0013	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6W0	9/14/2004	TRANSECT, RAW GRAB	Columbia River	HANFRD TS-1 HRM 28.7	1		Arsenic	0.0006	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6W1	9/14/2004	TRANSECT, RAW GRAB	Columbia River	HANFRD TS-2 HRM 28.7	1		Arsenic	0.0006	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6W3	9/14/2004	TRANSECT, RAW GRAB	Columbia River	HANFRD TS-5 HRM 28.7	1		Arsenic	0.0006	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6W4	9/14/2004	TRANSECT, RAW GRAB	Columbia River	HANFRD TS-7 HRM 28.7	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6W5	9/14/2004	TRANSECT, RAW GRAB	Columbia River	HANFRD TS-10 HRM 28.7	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6W6	9/15/2004	TRANSECT, RAW GRAB	Columbia River	300 AREA -1 HRM 43.1	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6W7	9/15/2004	TRANSECT, RAW GRAB	Columbia River	300 AREA -2 HRM 43.1	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6W8	9/15/2004	TRANSECT, RAW GRAB	Columbia River	300 AREA -3 HRM 43.1	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B743	9/14/2004	TRANSECT, RAW GRAB	Columbia River	HANFRD TWNSITE HRM30	1		Arsenic	0.0006	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B763	9/15/2004	TRANSECT, RAW GRAB	Columbia River	300 AREA -1 HRM 43.1	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B764	9/15/2004	TRANSECT, RAW GRAB	Columbia River	300 AREA -2 HRM 43.1	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B765	9/15/2004	TRANSECT, RAW GRAB	Columbia River	300 AREA -3 HRM 43.1	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B766	9/15/2004	TRANSECT, RAW GRAB	Columbia River	300 AREA -5 HRM 43.1	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B767	9/15/2004	TRANSECT, RAW GRAB	Columbia River	300 AREA -7 HRM 43.1	1		Arsenic	0.0008	mg/L	X	0.00063	0.15000	0.00002

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B768	9/15/2004	TRANSECT, RAW GRAB	Columbia River	300 AREA-10 HRM 43.1	1		Arsenic	0.0013	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B769	9/14/2004	TRANSECT, RAW GRAB	Columbia River	HANFRD TS-1 HRM 28.7	1		Arsenic	0.0006	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B772	9/14/2004	TRANSECT, RAW GRAB	Columbia River	HANFRD TS-5 HRM 28.7	1		Arsenic	0.0006	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B774	9/14/2004	TRANSECT, RAW GRAB	Columbia River	HANFRD TS-10 HRM 28.7	1		Arsenic	0.0006	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7C1	9/15/2004	TRANSECT, RAW GRAB	Columbia River	300 AREA SHR HRM41.5	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7C2	9/15/2004	TRANSECT, RAW GRAB	Columbia River	300 AREA SHR HRM41.5	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7C5	9/15/2004	TRANSECT, RAW GRAB	Columbia River	300 AREA SHR HRM42.1	1		Arsenic	0.0009	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7C6	9/15/2004	TRANSECT, RAW GRAB	Columbia River	300 AREA SHR HRM42.1	1		Arsenic	0.0008	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7C9	9/15/2004	TRANSECT, RAW GRAB	Columbia River	300 AREA SHR HRM42.9	1		Arsenic	0.0010	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7D0	9/15/2004	TRANSECT, RAW GRAB	Columbia River	300 AREA SHR HRM42.9	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7D3	9/14/2004	TRANSECT, RAW GRAB	Columbia River	HANFRD TWNSITE HRM28	1		Arsenic	0.0006	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7D4	9/14/2004	TRANSECT, RAW GRAB	Columbia River	HANFRD TWNSITE HRM28	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7H5	9/15/2004	TRANSECT, RAW GRAB	Columbia River	300 AREA SHR HRM42.4	1		Arsenic	0.0008	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7H6	9/15/2004	TRANSECT, RAW GRAB	Columbia River	300 AREA SHR HRM42.4	1		Arsenic	0.0008	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7H8	9/15/2004	UNFILTERED, RAW GRAB	Columbia River	300 AREA OUTFL13	1		Arsenic	0.0027	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7H9	9/15/2004	RAW GRAB	Columbia River	300 AREA OUTFL13	1		Arsenic	0.0028	mg/L	X	0.00063	0.15000	0.00002

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFL8	10/25/2004	UNFILTERED, RAW GRAB	Columbia River	HANFORD SPRING 28-2	1		Arsenic	0.0036	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFL9	10/25/2004	UNFILTERED, RAW GRAB	Columbia River	300 AREA SPRING 42-2	1		Arsenic	0.0017	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFX8	10/25/2004	RAW GRAB	Columbia River	HANFORD SPRING 28-2	1		Arsenic	0.0031	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFX9	10/25/2004	UNFILTERED, RAW GRAB	Columbia River	HANFORD SPR UR 28-2	1		Arsenic	0.0028	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFY0	10/25/2004	RAW GRAB	Columbia River	HANFORD SPR UR 28-2	1		Arsenic	0.0010	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFY1	10/25/2004	UNFILTERED, RAW GRAB	Columbia River	HANFORD SPR DR 28-2	1		Arsenic	0.0037	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFY2	10/25/2004	RAW GRAB	Columbia River	HANFORD SPR DR 28-2	1		Arsenic	0.0035	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFY3	10/25/2004	RAW GRAB	Columbia River	300 AREA SPRING 42-2	1		Arsenic	0.0012	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFY4	10/25/2004	UNFILTERED, RAW GRAB	Columbia River	300 AREA SPR DR 42-2	1		Arsenic	0.0012	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFY5	10/25/2004	RAW GRAB	Columbia River	300 AREA SPR DR 42-2	1		Arsenic	0.0012	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DLJ0	9/15/2005	TRANSECT, RAW GRAB	Columbia River	300 AREA-10 HRM 43.1	1		Arsenic	0.0010	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DLJ7	9/13/2005	TRANSECT, RAW GRAB	Columbia River	HANFRD TS-10 HRM 28.7	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DM35	9/13/2005	TRANSECT, RAW GRAB	Columbia River	HANFRD TWNSITE HRM28	1		Arsenic	0.0006	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DM58	9/15/2005	UNFILTERED, RAW GRAB	Columbia River	300 AREA OUTFL13	1		Arsenic	0.0029	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DM59	9/15/2005	RAW GRAB	Columbia River	300 AREA OUTFL13	1		Arsenic	0.0028	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DLT5	9/13/2005	TRANSECT, RAW GRAB	Columbia River	HANFRD TWNSITE HRM30	1		Arsenic	0.0006	mg/L	X	0.00063	0.15000	0.00002

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DLT8	9/13/2005	TRANSECT, RAW GRAB	Columbia River	HANFRD TWNSITE HRM30	1		Arsenic	0.0006	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DLW9	9/15/2005	TRANSECT, RAW GRAB	Columbia River	300 AREA -7 HRM 43.1	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DLX0	9/15/2005	TRANSECT, RAW GRAB	Columbia River	300 AREA-10 HRM 43.1	1		Arsenic	0.0010	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DM23	9/15/2005	TRANSECT, RAW GRAB	Columbia River	300 AREA SHR HRM41.5	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DM24	9/15/2005	TRANSECT, RAW GRAB	Columbia River	300 AREA SHR HRM41.5	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DM27	9/15/2005	TRANSECT, RAW GRAB	Columbia River	300 AREA SPRING 42-2	1	"COLLECTED AT RIVERBANK SPRING, NO ACTIVE SEEP WAS OBSERVED."	Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DM28	9/15/2005	TRANSECT, RAW GRAB	Columbia River	300 AREA SPRING 42-2	1	"COLLECTED AT RIVERBANK SPRING, NO ACTIVE SEEP WAS OBSERVED."	Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DM36	9/13/2005	TRANSECT, RAW GRAB	Columbia River	HANFRD TWNSITE HRM28	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DWT9	10/6/2005	UNFILTERED, RAW GRAB	Columbia River	300 AREA SPRING 41-9	1	20 METERS DOWNSTREAM OF GPS READING.	Arsenic	0.0079	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DWV0	10/6/2005	RAW GRAB	Columbia River	300 AREA SPRING 41-9	1	20 METERS DOWNSTREAM OF GPS READING.	Arsenic	0.0056	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DWP7	10/6/2005	UNFILTERED, RAW GRAB	Columbia River	300 AREA SPRING 42-2	1		Arsenic	0.0025	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DWR7	10/6/2005	RAW GRAB	Columbia River	300 AREA SPRING 42-2	1		Arsenic	0.0018	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DWR8	10/6/2005	UNFILTERED, RAW GRAB	Columbia River	300 AREA SPR DR 42-2	1		Arsenic	0.0016	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DWR9	10/6/2005	RAW GRAB	Columbia River	300 AREA SPR DR 42-2	1		Arsenic	0.0013	mg/L	X	0.00063	0.15000	0.00002

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ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F5F1	10/18/2005	UNFILTERED, RAW GRAB	Columbia River	HANFORD SPRING 28-2	1		Arsenic	0.0039	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F5M6	10/18/2005	RAW GRAB	Columbia River	HANFORD SPRING 28-2	1		Arsenic	0.0031	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F5M7	10/18/2005	UNFILTERED, RAW GRAB	Columbia River	HANFORD SPR UR 28-2	1		Arsenic	0.0026	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F5M8	10/18/2005	RAW GRAB	Columbia River	HANFORD SPR UR 28-2	1		Arsenic	0.0023	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F5M9	10/18/2005	UNFILTERED, RAW GRAB	Columbia River	HANFORD SPR DR 28-2	1		Arsenic	0.0029	mg/L	X	0.00063	0.15000	0.00002
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F5N0	10/18/2005	RAW GRAB	Columbia River	HANFORD SPR DR 28-2	1		Arsenic	0.0026	mg/L	X	0.00063	0.15000	0.00002
ViewC	100/300 Areas RCBRA	6/11/2007	J11126	1/16/2006	Grab	300 AREA	300-1 REFERENCE	1		Barium	0.0306	mg/L	C	0.02684	0.00400	1.00000
ViewC	100/300 Areas RCBRA	6/11/2007	J11127	1/16/2006	Grab	300 AREA	300-2 REFERENCE	1		Barium	0.0315	mg/L	C	0.02684	0.00400	1.00000
ViewC	100/300 Areas RCBRA	6/11/2007	J11128	1/17/2006	Grab	300 AREA	URANIUM SITE 1	1		Barium	0.0329	mg/L	C	0.02684	0.00400	1.00000
ViewC	100/300 Areas RCBRA	6/11/2007	J11129	1/17/2006	Grab	300 AREA	URANIUM SITE 2	1		Barium	0.0337	mg/L	C	0.02684	0.00400	1.00000
ViewC	100/300 Areas RCBRA	6/11/2007	J11193	1/17/2006	Grab	300 AREA	URANIUM SITE 3	1		Barium	0.0330	mg/L	C	0.02684	0.00400	1.00000
ViewC	100/300 Areas RCBRA	6/11/2007	J11194	1/18/2006	Grab	300 AREA	URANIUM SITE 4	1		Barium	0.0332	mg/L	C	0.02684	0.00400	1.00000
ViewC	100/300 Areas RCBRA	6/11/2007	J111B4	1/18/2006	Grab	300 AREA	URANIUM SITE 3	1		Barium	0.0337	mg/L	C	0.02684	0.00400	1.00000
ViewC	100/300 Areas RCBRA	6/11/2007	J111K8	1/19/2006	Grab	300 AREA	URANIUM SITE 5	1		Barium	0.0316	mg/L	C	0.02684	0.00400	1.00000
ViewC	100/300 Areas RCBRA	6/11/2007	J111N2	1/19/2006	Grab	300 AREA	URANIUM SITE 6	1		Barium	0.0317	mg/L	C	0.02684	0.00400	1.00000
ViewC	100/300 Areas RCBRA	6/11/2007	J111N3	1/19/2006	Grab	300 AREA	URANIUM SITE 7	1		Barium	0.0313	mg/L	C	0.02684	0.00400	1.00000
ViewC	100/300 Areas RCBRA	6/11/2007	J111N4	1/22/2006	Grab	300 AREA	URANIUM SITE 8	1		Barium	0.0336	mg/L	C	0.02684	0.00400	1.00000

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewC	100/300 Areas RCBRA	6/11/2007	J111N5	1/22/2006	Grab	300 AREA	URANIUM SITE 9	1		Barium	0.0308	mg/L	C	0.02684	0.00400	1.00000
ViewC	100/300 Areas RCBRA	6/11/2007	J111N6	1/24/2006	Grab	300 AREA	URANIUM SITE 10	1		Barium	0.0399	mg/L	NA	0.02684	0.00400	1.00000
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RL6	8/27/2001	Discrete	Columbia River	300 AREA SPRING 42-2	1	Seep	Barium	0.0792	mg/L		0.02684	0.00400	1.00000
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RM8	8/27/2001	Discrete	Columbia River	300 AREA SPRING 42-2	1	Seep	Barium	0.0721	mg/L		0.02684	0.00400	1.00000
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RM9	8/27/2001	Discrete	Columbia River	300 AREA SPR DR 42-2	1	Seep	Barium	0.0809	mg/L		0.02684	0.00400	1.00000
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RN0	8/27/2001	Discrete	Columbia River	300 AREA SPR DR 42-2	1	Seep	Barium	0.0775	mg/L		0.02684	0.00400	1.00000
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RP1	8/27/2001	Discrete	Columbia River	300 SPR 9 -1	1		Barium	0.0593	mg/L		0.02684	0.00400	1.00000
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RP2	8/27/2001	Discrete	Columbia River	300 SPR 9 -1	1		Barium	0.0594	mg/L		0.02684	0.00400	1.00000
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RP5	8/27/2001	Discrete	Columbia River	300 SPR 11 -1	1		Barium	0.0326	mg/L		0.02684	0.00400	1.00000
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RP6	8/27/2001	Discrete	Columbia River	300 SPR 11 -1	1		Barium	0.0309	mg/L		0.02684	0.00400	1.00000
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T09	8/27/2001	Discrete	Columbia River	300 SPR 7 -1	1		Barium	0.0509	mg/L		0.02684	0.00400	1.00000
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T10	8/27/2001	Discrete	Columbia River	300 SPR 7 -1	1		Barium	0.0503	mg/L		0.02684	0.00400	1.00000
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7Y9	10/18/2005		Columbia River	300 AREA SPRING 42-2	1	300 AREA SPRING 42-2	Barium	0.0604	mg/L	B	0.02684	0.00400	1.00000
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F803	10/18/2005		Columbia River	300 AREA SPR DR 42-2	1	300 AREA SPR DR 42-2	Barium	0.0432	mg/L	B	0.02684	0.00400	1.00000
ViewC	100/300 Areas RCBRA	6/11/2007	J11194	1/18/2006	Grab	300 AREA	URANIUM SITE 4	1		Boron	0.0120	mg/L	NA	0.01172	0.00160	0.00000
ViewC	100/300 Areas RCBRA	6/11/2007	J11126	1/16/2006	Grab	300 AREA	300-1 REFERENCE	1		Boron	0.0144	mg/L	NA	0.01172	0.00160	0.00000
ViewC	100/300 Areas RCBRA	6/11/2007	J111B4	1/18/2006	Grab	300 AREA	URANIUM SITE 3	1		Boron	0.0139	mg/L	NA	0.01172	0.00160	0.00000
ViewC	100/300 Areas RCBRA	6/11/2007	J111K8	1/19/2006	Grab	300 AREA	URANIUM SITE 5	1		Boron	0.0208	mg/L	NA	0.01172	0.00160	0.00000

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ViewC	100/300 Areas RCBRA	6/11/2007	J111N3	1/19/2006	Grab	300 AREA	URANIUM SITE 7	1		Boron	0.0120	mg/L	NA	0.01172	0.00160	0.00000
ViewC	100/300 Areas RCBRA	6/11/2007	J111N4	1/22/2006	Grab	300 AREA	URANIUM SITE 8	1		Boron	0.0153	mg/L	NA	0.01172	0.00160	0.00000
ViewC	100/300 Areas RCBRA	6/11/2007	J111N6	1/24/2006	Grab	300 AREA	URANIUM SITE 10	1		Boron	0.0173	mg/L	NA	0.01172	0.00160	0.00000
ViewC	100/300 Areas RCBRA	6/11/2007	J11126	1/16/2006	Grab	300 AREA	300-1 REFERENCE	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewC	100/300 Areas RCBRA	6/11/2007	J11127	1/16/2006	Grab	300 AREA	300-2 REFERENCE	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewC	100/300 Areas RCBRA	6/11/2007	J11128	1/17/2006	Grab	300 AREA	URANIUM SITE 1	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewC	100/300 Areas RCBRA	6/11/2007	J11129	1/17/2006	Grab	300 AREA	URANIUM SITE 2	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewC	100/300 Areas RCBRA	6/11/2007	J11193	1/17/2006	Grab	300 AREA	URANIUM SITE 3	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewC	100/300 Areas RCBRA	6/11/2007	J11194	1/18/2006	Grab	300 AREA	URANIUM SITE 4	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewC	100/300 Areas RCBRA	6/11/2007	J111B4	1/18/2006	Grab	300 AREA	URANIUM SITE 3	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewC	100/300 Areas RCBRA	6/11/2007	J111K8	1/19/2006	Grab	300 AREA	URANIUM SITE 5	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewC	100/300 Areas RCBRA	6/11/2007	J111N2	1/19/2006	Grab	300 AREA	URANIUM SITE 6	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewC	100/300 Areas RCBRA	6/11/2007	J111N3	1/19/2006	Grab	300 AREA	URANIUM SITE 7	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewC	100/300 Areas RCBRA	6/11/2007	J111N4	1/22/2006	Grab	300 AREA	URANIUM SITE 8	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewC	100/300 Areas RCBRA	6/11/2007	J111N5	1/22/2006	Grab	300 AREA	URANIUM SITE 9	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewC	100/300 Areas RCBRA	6/11/2007	J111N6	1/24/2006	Grab	300 AREA	URANIUM SITE 10	1		Uranium	0.0206	mg/L	U	0.00050	0.00260	0.00730
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WT0	5/14/2003	Discrete	Columbia River	Ringold Wasteway	1	coordinates estimated	Uranium	0.0083	mg/L	X	0.00050	0.00260	0.00730

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ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WT1	5/14/2003	Discrete	Columbia River	Ringold Wasteway	1	coordinates estimated	Uranium	0.0086	mg/L	X	0.00050	0.00260	0.00730
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WT2	5/14/2003	Discrete	Columbia River	Ringold Wasteway	1	coordinates estimated	Uranium	0.0086	mg/L	X	0.00050	0.00260	0.00730
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WT3	5/14/2003	Discrete	Columbia River	Ringold Wasteway	1	coordinates estimated	Uranium	0.0087	mg/L	X	0.00050	0.00260	0.00730
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WT4	5/14/2003	Discrete	Columbia River	Ringold Wasteway	1	coordinates estimated	Uranium	0.0086	mg/L	X	0.00050	0.00260	0.00730
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WT5	5/14/2003	Discrete	Columbia River	Ringold Wasteway	1	coordinates estimated	Uranium	0.0085	mg/L	X	0.00050	0.00260	0.00730
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F7Y7	10/18/2005		Columbia River	300 AREA SPRING 42-2	1	300 AREA SPRING 42-2	Uranium	0.0442	mg/L		0.00050	0.00260	0.00730
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F801	10/18/2005		Columbia River	300 AREA SPR DR 42-2	1	300 AREA SPR DR 42-2	Uranium	0.0339	mg/L		0.00050	0.00260	0.00730
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0V208	6/14/1999	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0V210	6/14/1999	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0V211	6/14/1999	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0V212	6/14/1999	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0V213	6/14/1999	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0V215	6/14/1999	Discrete	Columbia River	Rich.Pmphs-4 HRM 46.4	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0V217	6/14/1999	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0V220	6/14/1999	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0V221	6/14/1999	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0V222	6/14/1999	Discrete	Columbia River	Rich.Pmphs-8 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002

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ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0V223	6/14/1999	Discrete	Columbia River	Rich.Pmphs-8 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0V224	6/14/1999	Discrete	Columbia River	Rich.Pmphs-9 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0V225	6/14/1999	Discrete	Columbia River	Rich.Pmphs-9 HRM 46.4	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0V226	6/14/1999	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0V227	6/14/1999	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WB82	9/16/1999	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X3W9	12/6/1999	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X401	12/6/1999	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0XRJ8	3/28/2000	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0010	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0XRN7	3/28/2000	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YCD4	6/20/2000	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YCD2	6/20/2000	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YCD3	6/20/2000	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YCC9	6/20/2000	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YCD0	6/20/2000	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YCD1	6/20/2000	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YCK2	6/20/2000	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YCL1	6/20/2000	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B0YCL2	6/20/2000	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106V4	9/19/2000	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106V9	9/19/2000	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10742	9/19/2000	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B11122	12/5/2000	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B11144	12/5/2000	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11H36	2/26/2001	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11H58	2/26/2001	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B124Y3	6/12/2001	Discrete	Columbia River	Rich.Pmphs HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B124Y4	6/12/2001	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B124Y5	6/12/2001	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B124Y6	6/12/2001	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B124Y7	6/12/2001	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B124Y8	6/12/2001	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12530	6/12/2001	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12539	6/12/2001	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12540	6/12/2001	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T79	9/13/2001	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T80	9/13/2001	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T81	9/13/2001	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T82	9/13/2001	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12T83	9/13/2001	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0010	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TJ6	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 46.4	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TJ7	9/13/2001	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TJ8	9/13/2001	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TJ9	9/13/2001	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TK0	9/13/2001	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TK1	9/13/2001	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0011	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TM4	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TM5	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TM8	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12TM9	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13LD5	12/4/2001	Discrete	Columbia River	Rich.Pmphs HRM 46.4	1	coordinates estimated	Arsenic	0.0015	mg/L		0.00063	0.15000	0.00002

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13LD8	12/4/2001	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13LF0	12/4/2001	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13LH7	12/4/2001	Discrete	Columbia River	Rich.Pmphs HRM 46.4	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13LJ2	12/4/2001	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13LK1	12/4/2001	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RT7	6/11/2002	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	Arsenic	0.0008	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RT8	6/11/2002	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	Arsenic	0.0008	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RT9	6/11/2002	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	Arsenic	0.0008	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RV0	6/11/2002	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	Arsenic	0.0008	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RV1	6/11/2002	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	Arsenic	0.0008	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RV2	6/11/2002	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0010	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RW8	6/11/2002	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RW9	6/11/2002	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RX0	6/11/2002	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RX1	6/11/2002	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RX3	6/11/2002	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0008	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RX8	6/11/2002	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1	coordinates estimated	Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RX9	6/11/2002	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1	coordinates estimated	Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RY2	6/11/2002	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1	coordinates estimated	Arsenic	0.0008	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14RY3	6/11/2002	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1	coordinates estimated	Arsenic	0.0008	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158F6	9/10/2002	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158F9	9/10/2002	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158H1	9/10/2002	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B158R7	9/10/2002	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B16339	12/10/2002	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B16361	12/10/2002	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16L94	3/25/2003	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0010	mg/L	C	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16LC6	3/25/2003	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0011	mg/L	C	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WR3	5/15/2003		Walla Walla River	WALLA WALLA-RIVER	1		Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B171V3	6/10/2003	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	Arsenic	0.0008	mg/L	C	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B171V4	6/10/2003	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	Arsenic	0.0009	mg/L	C	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B171V5	6/10/2003	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	Arsenic	0.0009	mg/L	C	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B171V6	6/10/2003	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	Arsenic	0.0008	mg/L	C	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B171V7	6/10/2003	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	Arsenic	0.0008	mg/L	C	0.00063	0.15000	0.00002

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B171V8	6/10/2003	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0009	mg/L	C	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B171Y5	6/10/2003	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L	C	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B171Y8	6/10/2003	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L	C	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B171Y9	6/10/2003	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	Arsenic	0.0006	mg/L	C	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17200	6/10/2003	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L	C	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17206	6/10/2003	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1		Arsenic	0.0007	mg/L	C	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17207	6/10/2003	Discrete	Columbia River	Rich.Pmphs HRM 43.9	1		Arsenic	0.0006	mg/L	C	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17209	6/10/2003	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1		Arsenic	0.0008	mg/L	C	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17210	6/10/2003	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1		Arsenic	0.0008	mg/L	C	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17211	6/10/2003	Discrete	Columbia River	Rich.Pmphs HRM 43.9	1		Arsenic	0.0008	mg/L	C	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17212	6/10/2003	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1		Arsenic	0.0008	mg/L	C	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17CD0	9/9/2003	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17CD5	9/9/2003	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0011	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17CN3	9/9/2003	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17CN4	9/9/2003	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17CN8	9/9/2003	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0010	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17CT1	9/9/2003	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1		Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17CT2	9/9/2003	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1		Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17CT4	9/9/2003	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1		Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B183R1	12/8/2003	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	Arsenic	0.0006	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B183R3	12/8/2003	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B183R4	12/8/2003	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B183W3	12/8/2003	Discrete	Columbia River	Rich.Pmphs HRM 43.9	1		Arsenic	0.0007	mg/L	C	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B183W4	12/8/2003	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1		Arsenic	0.0008	mg/L	C	0.00063	0.15000	0.00002
ViewD	City of Richland Drinking Water data	1/1/2005	125 00287	1/15/2004	Discrete	Columbia River	City of Richland Water Intake	2	coordinates not provided	Arsenic	0.0020	mg/L	U	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6Y3	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-1 HRM46.4	1		Arsenic	0.0008	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6Y4	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-2 HRM46.4	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6Y5	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-3 HRM46.4	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6Y6	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-5 HRM46.4	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6Y7	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-7 HRM46.4	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B6Y8	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-10 HRM46.4	1		Arsenic	0.0012	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B757	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-1 HRM46.4	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B759	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-3 HRM46.4	1		Arsenic	0.0006	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B760	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-5 HRM46.4	1		Arsenic	0.0006	mg/L	X	0.00063	0.15000	0.00002

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B761	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-7 HRM46.4	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B762	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-10 HRM46.4	1		Arsenic	0.0011	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B785	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 45.8	1		Arsenic	0.0008	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B786	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 45.0	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B787	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 43.9	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B788	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 43.5	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B789	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 45.8	1		Arsenic	0.0008	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B790	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 45.0	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B791	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 43.9	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B792	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 43.5	1		Arsenic	0.0008	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DLL5	9/14/2005	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-1 HRM46.4	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DLM0	9/14/2005	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-10 HRM46.4	1		Arsenic	0.0011	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DLV9	9/14/2005	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-1 HRM46.4	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DLW4	9/14/2005	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-10 HRM46.4	1		Arsenic	0.0010	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DLY7	9/14/2005	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 45.8	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DLY9	9/14/2005	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 43.9	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DM00	9/14/2005	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 43.5	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DM01	9/14/2005	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 45.8	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DM03	9/14/2005	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 43.9	1		Arsenic	0.0017	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DM04	9/14/2005	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 43.5	1		Arsenic	0.0007	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DWT7	10/6/2005	UNFILTERED, RAW GRAB	Columbia River	RICHLAND SPR(SRL 437-1)	1		Arsenic	0.0026	mg/L	X	0.00063	0.15000	0.00002
ViewD	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DWT8	10/6/2005	RAW GRAB	Columbia River	RICHLAND SPR(SRL 437-1)	1		Arsenic	0.0024	mg/L	X	0.00063	0.15000	0.00002
ViewD	City of Richland Drinking Water data	1/1/2005	125 00287	1/15/2004	Discrete	Columbia River	City of Richland Water Intake	2	coordinates not provided	Barium	0.1000	mg/L	U	0.02684	0.00400	1.00000
ViewD	Citizens Monitoring and Technical Assessment - Analysis of Chemical Contaminants in Hanford Reach Biota and Environmental Materials at the Perimeter of the Hanford Nuclear Reservation and on the Columbia River	6/1/2005	HR047R	8/4/2004	Discrete	Columbia River	Richland Water Intake	1		Chromium	0.1000	mg/L	U	0.00019	0.07400	0.10950
ViewD-Snake	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WR4	5/15/2003	Discrete	Snake River	HOOD PARK-MID-RIVER	1	coordinates estimated	Arsenic	0.0011	mg/L		0.00063	0.15000	0.00002
ViewD-Snake	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WR5	5/15/2003	Discrete	Snake River	HOOD PARK-FRANKLIN CO. SHORE	1	coordinates estimated	Arsenic	0.0011	mg/L		0.00063	0.15000	0.00002
ViewD-Snake	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WR6	5/15/2003	Discrete	Snake River	HOOD PARK-WALLA WALLA SHORE	1	coordinates estimated	Arsenic	0.0011	mg/L		0.00063	0.15000	0.00002
ViewD-Snake	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WR7	5/15/2003	Discrete	Snake River	HOOD PARK-WALLA WALLA SHORE	1	coordinates estimated	Arsenic	0.0012	mg/L		0.00063	0.15000	0.00002
ViewD-Snake	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WR8	5/15/2003	Discrete	Snake River	HOOD PARK-FRANKLIN CO. SHORE	1	coordinates estimated	Arsenic	0.0011	mg/L		0.00063	0.15000	0.00002
ViewD-Snake	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WR9	5/15/2003	Discrete	Snake River	HOOD PARK-MID-RIVER	1	coordinates estimated	Arsenic	0.0011	mg/L		0.00063	0.15000	0.00002

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD-Yakima	Statewide Arsenic Sampling in Selected Rivers	7/1/2001	1296007	7/9/2001	Discrete	Yakima River	Kiona, Washington	1		Arsenic	0.0024	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Statewide Arsenic Sampling in Selected Rivers	7/1/2001	1368084	8/14/2001	Discrete	Yakima River	Kiona, Washington	1		Arsenic	0.0027	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Statewide Arsenic Sampling in Selected Rivers	7/1/2001	1408090	9/4/2001	Discrete	Yakima River	Kiona, Washington	1		Arsenic	0.0022	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Statewide Arsenic Sampling in Selected Rivers	7/1/2001	1468165	10/10/2001	Discrete	Yakima River	Kiona, Washington	1		Arsenic	0.0020	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Statewide Arsenic Sampling in Selected Rivers	7/1/2001	1498111	11/13/2001	Discrete	Yakima River	Kiona, Washington	1		Arsenic	0.0013	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Statewide Arsenic Sampling in Selected Rivers	7/1/2001	2018090	12/5/2001	Discrete	Yakima River	Kiona, Washington	1		Arsenic	0.0012	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WP2	5/14/2003	Discrete	Yakima River		1	coordinates estimated	Arsenic	0.0015	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WP3	5/14/2003	Discrete	Yakima River		1	coordinates estimated	Arsenic	0.0014	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WP4	5/14/2003	Discrete	Yakima River		1	coordinates estimated	Arsenic	0.0015	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WP5	5/14/2003	Discrete	Yakima River		1	coordinates estimated	Arsenic	0.0015	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WP6	5/14/2003	Discrete	Yakima River		1	coordinates estimated	Arsenic	0.0017	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WP7	5/14/2003	Discrete	Yakima River		1	coordinates estimated	Arsenic	0.0016	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WT6	5/14/2003	Discrete	ESQUATZEL CANAL		1	coordinates estimated	Arsenic	0.0045	mg/L	X	0.00063	0.15000	0.00002
ViewD-Yakima	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WT7	5/14/2003	Discrete	ESQUATZEL CANAL		1	coordinates estimated	Arsenic	0.0044	mg/L	X	0.00063	0.15000	0.00002
ViewD-Yakima	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WT8	5/14/2003	Discrete	ESQUATZEL CANAL		1	coordinates estimated	Arsenic	0.0047	mg/L	X	0.00063	0.15000	0.00002
ViewD-Yakima	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WT9	5/14/2003	Discrete	ESQUATZEL CANAL		1	coordinates estimated	Arsenic	0.0044	mg/L	X	0.00063	0.15000	0.00002
ViewD-Yakima	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WV0	5/14/2003	Discrete	ESQUATZEL CANAL		1	coordinates estimated	Arsenic	0.0044	mg/L	X	0.00063	0.15000	0.00002

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD-Yakima	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WV1	5/14/2003	Discrete	ESQUATZEL CANAL		1	coordinates estimated	Arsenic	0.0045	mg/L	X	0.00063	0.15000	0.00002
ViewD-Yakima	Statewide Arsenic Sampling in Selected Rivers	7/1/2001	2068090	1/9/2002	Discrete	Yakima River	Kiona, Washington	1		Arsenic	0.0015	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Statewide Arsenic Sampling in Selected Rivers	7/1/2001	2118115	2/6/2002	Discrete	Yakima River	Kiona, Washington	1		Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Statewide Arsenic Sampling in Selected Rivers	7/1/2001	2158165	3/6/2002	Discrete	Yakima River	Kiona, Washington	1		Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Statewide Arsenic Sampling in Selected Rivers	7/1/2001	2178190	4/3/2002	Discrete	Yakima River	Kiona, Washington	1		Arsenic	0.0010	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Statewide Arsenic Sampling in Selected Rivers	7/1/2001	2228090	5/10/2002	Discrete	Yakima River	Kiona, Washington	1		Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Statewide Arsenic Sampling in Selected Rivers	7/1/2001	2268165	6/12/2002	Discrete	Yakima River	Kiona, Washington	1		Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Concentrations and Loads of Suspended Sediment and Nutrients in Surface Water of the Yakima River Basin, Washington, 1999-2000- With an Analysis of Trends of Concentrations	1/1/2003	132642	10/8/2003	Discrete	Yakima River	Kiona, Washington	2		Arsenic	0.0020	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Concentrations and Loads of Suspended Sediment and Nutrients in Surface Water of the Yakima River Basin, Washington, 1999-2000- With an Analysis of Trends of Concentrations	1/1/2003	132642-F	10/8/2003	Discrete	Yakima River	Kiona, Washington	2		Arsenic	0.0024	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Concentrations and Loads of Suspended Sediment and Nutrients in Surface Water of the Yakima River Basin, Washington, 1999-2000- With an Analysis of Trends of Concentrations	1/1/2003	132819	12/9/2003	Discrete	Yakima River	Kiona, Washington	2		Arsenic	0.0011	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Concentrations and Loads of Suspended Sediment and Nutrients in Surface Water of the Yakima River Basin, Washington, 1999-2000- With an Analysis of Trends of Concentrations	1/1/2003	132819-F	12/9/2003	Discrete	Yakima River	Kiona, Washington	2		Arsenic	0.0012	mg/L		0.00063	0.15000	0.00002

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD-Yakima	Concentrations and Loads of Suspended Sediment and Nutrients in Surface Water of the Yakima River Basin, Washington, 1999-2000- With an Analysis of Trends of Concentrations	1/1/2003	133000	2/11/2004	Discrete	Yakima River	Kiona, Washington	2		Arsenic	0.0011	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Concentrations and Loads of Suspended Sediment and Nutrients in Surface Water of the Yakima River Basin, Washington, 1999-2000- With an Analysis of Trends of Concentrations	1/1/2003	133000-F	2/11/2004	Discrete	Yakima River	Kiona, Washington	2		Arsenic	0.0012	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Concentrations and Loads of Suspended Sediment and Nutrients in Surface Water of the Yakima River Basin, Washington, 1999-2000- With an Analysis of Trends of Concentrations	1/1/2003	133239	4/14/2004	Discrete	Yakima River	Kiona, Washington	2		Arsenic	0.0010	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Concentrations and Loads of Suspended Sediment and Nutrients in Surface Water of the Yakima River Basin, Washington, 1999-2000- With an Analysis of Trends of Concentrations	1/1/2003	133239-F	4/14/2004	Discrete	Yakima River	Kiona, Washington	2		Arsenic	0.0007	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Concentrations and Loads of Suspended Sediment and Nutrients in Surface Water of the Yakima River Basin, Washington, 1999-2000- With an Analysis of Trends of Concentrations	1/1/2003	133374	6/9/2004	Discrete	Yakima River	Kiona, Washington	2		Arsenic	0.0015	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Concentrations and Loads of Suspended Sediment and Nutrients in Surface Water of the Yakima River Basin, Washington, 1999-2000- With an Analysis of Trends of Concentrations	1/1/2003	133374-F	6/9/2004	Discrete	Yakima River	Kiona, Washington	2		Arsenic	0.0015	mg/L		0.00063	0.15000	0.00002

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD-Yakima	Concentrations and Loads of Suspended Sediment and Nutrients in Surface Water of the Yakima River Basin, Washington, 1999-2000- With an Analysis of Trends of Concentrations	1/1/2003	133572	8/4/2004	Discrete	Yakima River	Kiona, Washington	2		Arsenic	0.0026	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Concentrations and Loads of Suspended Sediment and Nutrients in Surface Water of the Yakima River Basin, Washington, 1999-2000- With an Analysis of Trends of Concentrations	1/1/2003	133572-F	8/4/2004	Discrete	Yakima River	Kiona, Washington	2		Arsenic	0.0028	mg/L		0.00063	0.15000	0.00002
ViewD-Yakima	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WT6	5/14/2003	Discrete	ESQUATZEL CANAL		1	coordinates estimated	Uranium	0.0058	mg/L	X	0.00050	0.00260	0.00730
ViewD-Yakima	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WT7	5/14/2003	Discrete	ESQUATZEL CANAL		1	coordinates estimated	Uranium	0.0059	mg/L	X	0.00050	0.00260	0.00730
ViewD-Yakima	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WT8	5/14/2003	Discrete	ESQUATZEL CANAL		1	coordinates estimated	Uranium	0.0058	mg/L	X	0.00050	0.00260	0.00730
ViewD-Yakima	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WT9	5/14/2003	Discrete	ESQUATZEL CANAL		1	coordinates estimated	Uranium	0.0059	mg/L	X	0.00050	0.00260	0.00730
ViewD-Yakima	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WV0	5/14/2003	Discrete	ESQUATZEL CANAL		1	coordinates estimated	Uranium	0.0058	mg/L	X	0.00050	0.00260	0.00730
ViewD-Yakima	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WV1	5/14/2003	Discrete	ESQUATZEL CANAL		1	coordinates estimated	Uranium	0.0061	mg/L	X	0.00050	0.00260	0.00730
ViewE	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WN6	5/15/2003	Discrete	Columbia River	MCNARY MID-RIVER NEAR DAM	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewE	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WN7	5/15/2003	Discrete	Columbia River	McNary-Washington side near dam	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewE	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WN8	5/15/2003	Discrete	Columbia River	McNary Dam-Oregon side near dam	1	coordinates estimated	Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002
ViewE	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WN9	5/15/2003	Discrete	Columbia River	McNary Dam-Oregon side near dam	1	coordinates estimated	Arsenic	0.0010	mg/L		0.00063	0.15000	0.00002

Table D-3. Metals Data in Surface Water Supporting Map Package #2 (64 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewE	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WP0	5/15/2003	Discrete	Columbia River	McNary-Washington side near dam	1	coordinates estimated	Arsenic	0.0008	mg/L		0.00063	0.15000	0.00002
ViewE	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B16WP1	5/15/2003	Discrete	Columbia River	MCNARY MID-RIVER NEAR DAM	1	coordinates estimated	Arsenic	0.0009	mg/L		0.00063	0.15000	0.00002

Refer to Columbia River Component Data Evaluation Summary Report July 2006 WCH-91 for Category definitions.
Refer to Table D-6 for Lab Qualifier definitions.
[a] Unassigned - Specific location coordinates are not available for this sample and therefore are not represented on the maps, however these results are included in the database and the summary tables.

Table D-4. Organics Data in Surface Water Supporting Map Package #3 (35 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X455	12/7/1999	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X456	12/7/1999	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X457	12/7/1999	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X458	12/7/1999	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewA	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N8	9/14/2000	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewA	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N9	9/14/2000	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewA	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106P0	9/14/2000	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewA	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106P1	9/14/2000	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RL3	8/27/2001	Discrete	Columbia River	Vernita Bridge-2	1	coordinates estimated	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RL5	8/27/2001	Discrete	Columbia River	Vernita Bridge-1	1	coordinates estimated	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM3	9/7/2001	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM4	9/7/2001	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM5	9/7/2001	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200

Table D-4. Organics Data in Surface Water Supporting Map Package #3 (35 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM6	9/7/2001	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15991	9/5/2002	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15991	9/5/2002	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15992	9/5/2002	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15992	9/5/2002	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15993	9/5/2002	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15993	9/5/2002	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15994	9/5/2002	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15994	9/5/2002	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewA	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B460	9/13/2004	TRANSECT, RAW GRAB	Columbia River	VERNITA-1 HRM 0.3	1		1,1,2-Trichloroethane	0.00021	mg/L	U	0.000114	1.20000	0.000200
ViewA	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B461	9/13/2004	TRANSECT, RAW GRAB	Columbia River	VERNITA-2 HRM 0.3	1		1,1,2-Trichloroethane	0.00021	mg/L	U	0.000114	1.20000	0.000200
ViewA	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B462	9/13/2004	TRANSECT, RAW GRAB	Columbia River	VERNITA-3 HRM 0.3	1		1,1,2-Trichloroethane	0.00021	mg/L	U	0.000114	1.20000	0.000200
ViewA	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B463	9/13/2004	TRANSECT, RAW GRAB	Columbia River	VERNITA-4 HRM 0.3	1		1,1,2-Trichloroethane	0.00021	mg/L	U	0.000114	1.20000	0.000200

Table D-4. Organics Data in Surface Water Supporting Map Package #3 (35 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X455	12/7/1999	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X456	12/7/1999	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X457	12/7/1999	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X458	12/7/1999	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewA	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N8	9/14/2000	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewA	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N9	9/14/2000	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewA	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106P0	9/14/2000	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewA	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106P1	9/14/2000	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RL3	8/27/2001	Discrete	Columbia River	Vernita Bridge-2	1	coordinates estimated	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RL5	8/27/2001	Discrete	Columbia River	Vernita Bridge-1	1	coordinates estimated	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM3	9/7/2001	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM4	9/7/2001	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM5	9/7/2001	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123

Table D-4. Organics Data in Surface Water Supporting Map Package #3 (35 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM6	9/7/2001	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15991	9/5/2002	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15992	9/5/2002	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15993	9/5/2002	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15994	9/5/2002	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewA	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B460	9/13/2004	TRANSECT, RAW GRAB	Columbia River	VERNITA-1 HRM 0.3	1		1,2-Dichloroethane	0.00021	mg/L	U	0.000093	0.91000	0.000123
ViewA	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B461	9/13/2004	TRANSECT, RAW GRAB	Columbia River	VERNITA-2 HRM 0.3	1		1,2-Dichloroethane	0.00021	mg/L	U	0.000093	0.91000	0.000123
ViewA	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B462	9/13/2004	TRANSECT, RAW GRAB	Columbia River	VERNITA-3 HRM 0.3	1		1,2-Dichloroethane	0.00021	mg/L	U	0.000093	0.91000	0.000123
ViewA	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B463	9/13/2004	TRANSECT, RAW GRAB	Columbia River	VERNITA-4 HRM 0.3	1		1,2-Dichloroethane	0.00021	mg/L	U	0.000093	0.91000	0.000123
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X455	12/7/1999	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X456	12/7/1999	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X457	12/7/1999	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X458	12/7/1999	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166

Table D-4. Organics Data in Surface Water Supporting Map Package #3 (35 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewA	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N8	9/14/2000	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewA	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N9	9/14/2000	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewA	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106P0	9/14/2000	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewA	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106P1	9/14/2000	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RL3	8/27/2001	Discrete	Columbia River	Vernita Bridge-2	1	coordinates estimated	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RL5	8/27/2001	Discrete	Columbia River	Vernita Bridge-1	1	coordinates estimated	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM3	9/7/2001	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM4	9/7/2001	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM5	9/7/2001	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM6	9/7/2001	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15991	9/5/2002	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15992	9/5/2002	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15993	9/5/2002	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166

Table D-4. Organics Data in Surface Water Supporting Map Package #3 (35 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15994	9/5/2002	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X455	12/7/1999	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X456	12/7/1999	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X457	12/7/1999	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewA	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X458	12/7/1999	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewA	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N8	9/14/2000	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewA	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N9	9/14/2000	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewA	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106P0	9/14/2000	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewA	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106P1	9/14/2000	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RL3	8/27/2001	Discrete	Columbia River	Vernita Bridge-2	1	coordinates estimated	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RL5	8/27/2001	Discrete	Columbia River	Vernita Bridge-1	1	coordinates estimated	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM3	9/7/2001	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM4	9/7/2001	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028

Table D-4. Organics Data in Surface Water Supporting Map Package #3 (35 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM5	9/7/2001	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewA	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM6	9/7/2001	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15991	9/5/2002	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15992	9/5/2002	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15993	9/5/2002	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewA	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15994	9/5/2002	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewA	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HL9	9/4/2003	Discrete	Columbia River	Vernita-1 HRM 0.3	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewA	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HM0	9/4/2003	Discrete	Columbia River	Vernita-2 HRM 0.3	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewA	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HM1	9/4/2003	Discrete	Columbia River	Vernita-3 HRM 0.3	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewA	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HM2	9/4/2003	Discrete	Columbia River	Vernita-4 HRM 0.3	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewA	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DMT5	9/12/2005	TRANSECT, RAW GRAB	Columbia River	VERNITA-1 HRM 0.3	1	317	Trichloroethene	0.00013	mg/L	U	0.000095	0.04700	0.000028
ViewA	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DMT6	9/12/2005	TRANSECT, RAW GRAB	Columbia River	VERNITA-2 HRM 0.3	1	570	Trichloroethene	0.00013	mg/L	U	0.000095	0.04700	0.000028
ViewA	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DMT7	9/12/2005	TRANSECT, RAW GRAB	Columbia River	VERNITA-3 HRM 0.3	1	318	Trichloroethene	0.00013	mg/L	U	0.000095	0.04700	0.000028

Table D-4. Organics Data in Surface Water Supporting Map Package #3 (35 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewA	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DMT8	9/12/2005	TRANSECT, RAW GRAB	Columbia River	VERNITA-4 HRM 0.3	1	319	Trichloroethene	0.00013	mg/L	U	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WMT1	10/25/1999	Discrete	Columbia River	100K SPRING 63-1	1	Seep	1,1,2-Trichloroethane	0.00023	mg/L	U	0.000114	1.20000	0.000200
ViewB1	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JP0	10/25/2000	Discrete	Columbia River	100B SPRING 38-3	1	Seep	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewB1	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JP2	10/17/2000	Discrete	Columbia River	100K SPRING 63-1	1	Seep	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewB1	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B135P3	10/22/2001	Discrete	Columbia River	100B SPRING 38-3	1	Seep	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewB1	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B135P5	10/25/2001	Discrete	Columbia River	100K SPRING 63-1	1	Seep	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewB1	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15CC3	9/16/2002	Discrete	Columbia River	100B SPRING 37-1	1	coordinates estimated, Seep	1,1,2-Trichloroethane	0.00072	mg/L	J	0.000114	1.20000	0.000200
ViewB1	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15CC3	9/16/2002	Discrete	Columbia River	100B SPRING 37-1	1	coordinates estimated, Seep	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewB1	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15CD0	9/16/2002	Discrete	Columbia River	100K SPRING 63-2	1	coordinates estimated, Seep	1,1,2-Trichloroethane	0.00076	mg/L	J	0.000114	1.20000	0.000200
ViewB1	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15CD0	9/16/2002	Discrete	Columbia River	100K SPRING 63-2	1	coordinates estimated, Seep	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewB1	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WMT1	10/25/1999	Discrete	Columbia River	100K SPRING 63-1	1	Seep	1,2-Dichloroethane	0.00014	mg/L	U	0.000093	0.91000	0.000123
ViewB1	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JP0	10/25/2000	Discrete	Columbia River	100B SPRING 38-3	1	Seep	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewB1	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JP2	10/17/2000	Discrete	Columbia River	100K SPRING 63-1	1	Seep	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123

Table D-4. Organics Data in Surface Water Supporting Map Package #3 (35 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB1	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B135P3	10/22/2001	Discrete	Columbia River	100B SPRING 38-3	1	Seep	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewB1	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B135P5	10/25/2001	Discrete	Columbia River	100K SPRING 63-1	1	Seep	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewB1	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15CC3	9/16/2002	Discrete	Columbia River	100B SPRING 37-1	1	coordinates estimated, Seep	1,2-Dichloroethane	0.00092	mg/L	J	0.000093	0.91000	0.000123
ViewB1	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15CD0	9/16/2002	Discrete	Columbia River	100K SPRING 63-2	1	coordinates estimated, Seep	1,2-Dichloroethane	0.00088	mg/L	J	0.000093	0.91000	0.000123
ViewB1	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WMT1	10/25/1999	Discrete	Columbia River	100K SPRING 63-1	1	Seep	Chloroform	0.00020	mg/L	J	0.000082	0.02800	0.000166
ViewB1	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JP0	10/25/2000	Discrete	Columbia River	100B SPRING 38-3	1	Seep	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewB1	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JP2	10/17/2000	Discrete	Columbia River	100K SPRING 63-1	1	Seep	Chloroform	0.00026	mg/L	J	0.000082	0.02800	0.000166
ViewB1	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B135P3	10/22/2001	Discrete	Columbia River	100B SPRING 38-3	1	Seep	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewB1	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B135P5	10/25/2001	Discrete	Columbia River	100K SPRING 63-1	1	Seep	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewB1	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15CC3	9/16/2002	Discrete	Columbia River	100B SPRING 37-1	1	coordinates estimated, Seep	Chloroform	0.00400	mg/L		0.000082	0.02800	0.000166
ViewB1	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15CD0	9/16/2002	Discrete	Columbia River	100K SPRING 63-2	1	coordinates estimated, Seep	Chloroform	0.00420	mg/L		0.000082	0.02800	0.000166
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17JM8	10/20/2003	Discrete	Columbia River	100B SPRING 37-1	1	coordinates estimated, Seep	Chloroform	0.00033	mg/L	J	0.000082	0.02800	0.000166
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17JM9	10/20/2003	Discrete	Columbia River	100B SPRING 39-2	1	Seep	Chloroform	0.00046	mg/L	J	0.000082	0.02800	0.000166

Table D-4. Organics Data in Surface Water Supporting Map Package #3 (35 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17JN0	10/20/2003	Discrete	Columbia River	100K SPRING 63-2	1	coordinates estimated, Seep	Chloroform	0.00021	mg/L	J	0.000082	0.02800	0.000166
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18136	11/13/2003	Discrete	Columbia River	100-B SPRING 37-1	1	Seep	Chloroform	0.00019	mg/L	J	0.000082	0.02800	0.000166
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18138	11/17/2003	Discrete	Columbia River	100-B SPRING 39-2	1	Seep	Chloroform	0.00023	mg/L	J	0.000082	0.02800	0.000166
ViewB1	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WMT1	10/25/1999	Discrete	Columbia River	100K SPRING 63-1	1	Seep	Trichloroethene	0.00200	mg/L	J	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JP0	10/25/2000	Discrete	Columbia River	100B SPRING 38-3	1	Seep	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JP2	10/17/2000	Discrete	Columbia River	100K SPRING 63-1	1	Seep	Trichloroethene	0.00330	mg/L		0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B135P3	10/22/2001	Discrete	Columbia River	100B SPRING 38-3	1	Seep	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B135P5	10/25/2001	Discrete	Columbia River	100K SPRING 63-1	1	Seep	Trichloroethene	0.00200	mg/L	J	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15CC3	9/16/2002	Discrete	Columbia River	100B SPRING 37-1	1	coordinates estimated, Seep	Trichloroethene	0.00038	mg/L	J	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15CD0	9/16/2002	Discrete	Columbia River	100K SPRING 63-2	1	coordinates estimated, Seep	Trichloroethene	0.00270	mg/L		0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17JM8	10/20/2003	Discrete	Columbia River	100B SPRING 37-1	1	coordinates estimated, Seep	Trichloroethene	0.00050	mg/L	J	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17JM9	10/20/2003	Discrete	Columbia River	100B SPRING 39-2	1	Seep	Trichloroethene	0.00061	mg/L	J	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17JN0	10/20/2003	Discrete	Columbia River	100K SPRING 63-2	1	coordinates estimated, Seep	Trichloroethene	0.00220	mg/L		0.000095	0.04700	0.000028

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18134	11/17/2003	Discrete	Columbia River	100 B/C AREA OUTFL2	1	Seep	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18136	11/13/2003	Discrete	Columbia River	100-B SPRING 37-1	1	Seep	Trichloroethene	0.00031	mg/L	J	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18137	11/13/2003	Discrete	Columbia River	100-B SPRING 38-3	1	Seep	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18138	11/17/2003	Discrete	Columbia River	100-B SPRING 39-2	1	Seep	Trichloroethene	0.00035	mg/L	J	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18145	11/17/2003		Columbia River	100 B/C AREA DR	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18146	11/17/2003		Columbia River	100 B/C AREA DR	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18147	11/17/2003		Columbia River	100 B/C AREA DR	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18148	11/17/2003		Columbia River	100 B/C AREA DR	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18149	11/17/2003		Columbia River	100 B/C AREA OUTFL1	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18150	11/17/2003		Columbia River	100 B/C AREA OUTFL2	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18151	11/17/2003		Columbia River	100 B/C AREA OUTFL3	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18152	11/13/2003		Columbia River	100 B/C AREA UR	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18153	11/13/2003		Columbia River	100 B/C AREA UR	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18154	11/13/2003		Columbia River	100 B/C AREA UR	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18155	11/13/2003		Columbia River	100 B/C AREA UR	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18156	11/13/2003		Columbia River	100-B SPRING 38-3	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18157	11/13/2003		Columbia River	100-B SPRING 38-3	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18158	11/13/2003		Columbia River	100-B SPRING 38-3	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18159	11/13/2003		Columbia River	100-B SPRING 38-3	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18160	11/13/2003		Columbia River	100-B SPRING 38-3	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18162	11/13/2003		Columbia River	100-B SPRING 39-2	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18163	11/13/2003		Columbia River	100-B SPRING 39-2	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18164	11/13/2003		Columbia River	100-B SPRING 39-2	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18165	11/13/2003		Columbia River	100-B SPRING 39-2	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB1	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B18166	11/13/2003		Columbia River	100-B SPRING DR 38-3	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JP3	10/25/2000	Discrete	Columbia River	100K SPRING 77-1	1	coordinates estimated, Seep	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B135P6	10/25/2001	Discrete	Columbia River	100K SPRING 77-1	1	coordinates estimated, Seep	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15CD1	10/21/2002	Discrete	Columbia River	100K SPRING 77-1	1	coordinates estimated, Seep	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15CD1	10/21/2002	Discrete	Columbia River	100K SPRING 77-1	1	coordinates estimated, Seep	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JP3	10/25/2000	Discrete	Columbia River	100K SPRING 77-1	1	coordinates estimated, Seep	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B135P6	10/25/2001	Discrete	Columbia River	100K SPRING 77-1	1	coordinates estimated, Seep	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15CD1	10/21/2002	Discrete	Columbia River	100K SPRING 77-1	1	coordinates estimated, Seep	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JP3	10/25/2000	Discrete	Columbia River	100K SPRING 77-1	1	coordinates estimated, Seep	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B135P6	10/25/2001	Discrete	Columbia River	100K SPRING 77-1	1	coordinates estimated, Seep	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15CD1	10/21/2002	Discrete	Columbia River	100K SPRING 77-1	1	coordinates estimated, Seep	Chloroform	0.00068	mg/L	J	0.000082	0.02800	0.000166
ViewB2	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JP3	10/25/2000	Discrete	Columbia River	100K SPRING 77-1	1	coordinates estimated, Seep	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B135P6	10/25/2001	Discrete	Columbia River	100K SPRING 77-1	1	coordinates estimated, Seep	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewB2	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15CD1	10/21/2002	Discrete	Columbia River	100K SPRING 77-1	1	coordinates estimated, Seep	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewB2	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17JN1	11/10/2003	Discrete	Columbia River	100K SPRING 77-1	1	coordinates estimated, Seep	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028

Table D-4. Organics Data in Surface Water Supporting Map Package #3 (35 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB2	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F670	11/10/2005	RAW GRAB	Columbia River	100-K SPRING 77-1	1	100-K SPRING 77-1	Trichloroethene	0.00013	mg/L	U	0.000095	0.04700	0.000028
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10FB9	11/7/2000	Discrete	Columbia River	SF-190-4	1	SEEP	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JP6	11/1/2000	Discrete	Columbia River	100H SPRING 150-1	1	Seep	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13619	10/22/2001		Columbia River	100-F SPRING 207-1	1	SF-207-1, Seep	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13622	10/22/2001		Columbia River	100-F SPRING 211-1	1	SF-211-1, Seep	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewB3	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17LB1	11/20/2003	Discrete	Columbia River	100-F SPRING	1	Seep	1,1,2-Trichloroethane	0.00028	mg/L	J	0.000114	1.20000	0.000200
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10FB9	11/7/2000	Discrete	Columbia River	SF-190-4	1	SEEP	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JP6	11/1/2000	Discrete	Columbia River	100H SPRING 150-1	1	Seep	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13619	10/22/2001		Columbia River	100-F SPRING 207-1	1	SF-207-1, Seep	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13622	10/22/2001		Columbia River	100-F SPRING 211-1	1	SF-211-1, Seep	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewB3	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17LB1	11/20/2003	Discrete	Columbia River	100-F SPRING	1	Seep	1,2-Dichloroethane	0.00023	mg/L	J	0.000093	0.91000	0.000123
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10FB9	11/7/2000	Discrete	Columbia River	SF-190-4	1	SEEP	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JP6	11/1/2000	Discrete	Columbia River	100H SPRING 150-1	1	Seep	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13619	10/22/2001		Columbia River	100-F SPRING 207-1	1	SF-207-1, Seep	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13622	10/22/2001		Columbia River	100-F SPRING 211-1	1	SF-211-1, Seep	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewB3	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17LB1	11/20/2003	Discrete	Columbia River	100-F SPRING	1	Seep	Chloroform	0.00092	mg/L	J	0.000082	0.02800	0.000166
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10FB9	11/7/2000	Discrete	Columbia River	SF-190-4	1	SEEP	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB3	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10JP6	11/1/2000	Discrete	Columbia River	100H SPRING 150-1	1	Seep	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13619	10/22/2001		Columbia River	100-F SPRING 207-1	1	SF-207-1, Seep	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13622	10/22/2001		Columbia River	100-F SPRING 211-1	1	SF-211-1, Seep	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewB3	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17LB1	11/20/2003	Discrete	Columbia River	100-F SPRING	1	Seep	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB4	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WMT9	11/1/1999	Discrete	Columbia River	100F SPRING 207-1	1	Seep	1,1,2-Trichloroethane	0.00023	mg/L	U	0.000114	1.20000	0.000200
ViewB4	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10FC2	11/7/2000	Discrete	Columbia River	100-F SPRING 207-1	1	SEEP	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewB4	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10FC5	11/7/2000	Discrete	Columbia River	SF-211-1	1	SEEP	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewB4	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15MN1	10/27/2002	Discrete	Columbia River	100-F SPRING 207-1	1	Seep	1,1,2-Trichloroethane	0.00039	mg/L	J	0.000114	1.20000	0.000200
ViewB4	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BJ59	10/26/2004	UNFILTERED, RAW GRAB	Columbia River	100-F SPRING 207-1	1	100-F SPRING 207-1	1,1,2-Trichloroethane	0.00021	mg/L	U	0.000114	1.20000	0.000200

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB4	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WMT9	11/1/1999	Discrete	Columbia River	100F SPRING 207-1	1	Seep	1,2-Dichloroethane	0.00014	mg/L	U	0.000093	0.91000	0.000123
ViewB4	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10FC2	11/7/2000	Discrete	Columbia River	100-F SPRING 207-1	1	SEEP	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewB4	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10FC5	11/7/2000	Discrete	Columbia River	SF-211-1	1	SEEP	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewB4	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15MN1	10/27/2002	Discrete	Columbia River	100-F SPRING 207-1	1	Seep	1,2-Dichloroethane	0.00048	mg/L	J	0.000093	0.91000	0.000123
ViewB4	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17RR2	11/3/2003	Discrete	Columbia River	100F SPRING 207-1	1	Seep	1,2-Dichloroethane	0.00013	mg/L	J	0.000093	0.91000	0.000123
ViewB4	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BJ59	10/26/2004	UNFILTERED, RAW GRAB	Columbia River	100-F SPRING 207-1	1	100-F SPRING 207-1	1,2-Dichloroethane	0.00021	mg/L	U	0.000093	0.91000	0.000123
ViewB4	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10FC2	11/7/2000	Discrete	Columbia River	100-F SPRING 207-1	1	SEEP	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewB4	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10FC5	11/7/2000	Discrete	Columbia River	SF-211-1	1	SEEP	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewB4	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15MN1	10/27/2002	Discrete	Columbia River	100-F SPRING 207-1	1	Seep	Chloroform	0.00140	mg/L		0.000082	0.02800	0.000166
ViewB4	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17RR2	11/3/2003	Discrete	Columbia River	100F SPRING 207-1	1	Seep	Chloroform	0.00049	mg/L	J	0.000082	0.02800	0.000166
ViewB4	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WMT9	11/1/1999	Discrete	Columbia River	100F SPRING 207-1	1	Seep	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB4	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10FC2	11/7/2000	Discrete	Columbia River	100-F SPRING 207-1	1	SEEP	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB4	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10FC5	11/7/2000	Discrete	Columbia River	SF-211-1	1	SEEP	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB4	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15MN1	10/27/2002	Discrete	Columbia River	100-F SPRING 207-1	1	Seep	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB4	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17RR2	11/3/2003	Discrete	Columbia River	100F SPRING 207-1	1	Seep	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewB4	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F671	11/15/2005	RAW GRAB	Columbia River	100-F SPRING 207-1	1	100-F SPRING 207-1	Trichloroethene	0.00013	mg/L	U	0.000095	0.04700	0.000028
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WMV3	11/1/1999	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	1,1,2-Trichloroethane	0.00023	mg/L	U	0.000114	1.20000	0.000200
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WMV4	11/1/1999	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	1,1,2-Trichloroethane	0.00023	mg/L	U	0.000114	1.20000	0.000200
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B108Y4	9/27/2000	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B108Y5	9/27/2000	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RL1	8/27/2001	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RL2	8/27/2001	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15CD5	10/7/2002	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	1,1,2-Trichloroethane	0.00069	mg/L	J	0.000114	1.20000	0.000200
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15CD5	10/7/2002	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BJ63	10/25/2004	UNFILTERED, RAW GRAB	Columbia River	300 AREA SPRING 42-2	1	300 AREA SPRING 42-2	1,1,2-Trichloroethane	0.00021	mg/L	U	0.000114	1.20000	0.000200
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BJ64	10/25/2004	UNFILTERED, RAW GRAB	Columbia River	300 AREA SPR DR 42-2	1	300 AREA SPR DR 42-2	1,1,2-Trichloroethane	0.00021	mg/L	U	0.000114	1.20000	0.000200

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WMV3	11/1/1999	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	1,2-Dichloroethane	0.00014	mg/L	U	0.000093	0.91000	0.000123
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WMV4	11/1/1999	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	1,2-Dichloroethane	0.00014	mg/L	U	0.000093	0.91000	0.000123
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B108Y4	9/27/2000	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	1,2-Dichloroethane	0.00084	mg/L	J	0.000093	0.91000	0.000123
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B108Y5	9/27/2000	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	1,2-Dichloroethane	0.00082	mg/L	J	0.000093	0.91000	0.000123
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RL1	8/27/2001	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RL2	8/27/2001	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15CD5	10/7/2002	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	1,2-Dichloroethane	0.00087	mg/L	J	0.000093	0.91000	0.000123
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BJ63	10/25/2004	UNFILTERED, RAW GRAB	Columbia River	300 AREA SPRING 42-2	1	300 AREA SPRING 42-2	1,2-Dichloroethane	0.00021	mg/L	U	0.000093	0.91000	0.000123
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BJ64	10/25/2004	UNFILTERED, RAW GRAB	Columbia River	300 AREA SPR DR 42-2	1	300 AREA SPR DR 42-2	1,2-Dichloroethane	0.00021	mg/L	U	0.000093	0.91000	0.000123
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B108Y4	9/27/2000	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B108Y5	9/27/2000	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RL1	8/27/2001	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RL2	8/27/2001	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15CD5	10/7/2002	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	Chloroform	0.00340	mg/L		0.000082	0.02800	0.000166
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WMV3	11/1/1999	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WMV4	11/1/1999	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	Trichloroethene	0.00200	mg/L	J	0.000095	0.04700	0.000028
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B108Y4	9/27/2000	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B108Y5	9/27/2000	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	Trichloroethene	0.00230	mg/L		0.000095	0.04700	0.000028
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RL1	8/27/2001	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	Trichloroethene	0.00200	mg/L		0.000095	0.04700	0.000028
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RL2	8/27/2001	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15CD5	10/7/2002	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17RR5	10/13/2003	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	Trichloroethene	0.00220	mg/L		0.000095	0.04700	0.000028
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17RR6	10/13/2003	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BJ64	10/25/2004	UNFILTERED, RAW GRAB	Columbia River	300 AREA SPR DR 42-2	1	300 AREA SPR DR 42-2	Trichloroethene	0.00072	mg/L	J	0.000095	0.04700	0.000028
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DWY6	10/6/2005	RAW GRAB	Columbia River	300 AREA SPRING 42-2	1	300 AREA SPRING 42-2	Trichloroethene	0.00013	mg/L	U	0.000095	0.04700	0.000028
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DWY7	10/6/2005	RAW GRAB	Columbia River	300 AREA SPR DR 42-2	1	300 AREA SPR DR 42-2	Trichloroethene	0.00140	mg/L		0.000095	0.04700	0.000028

Table D-4. Organics Data in Surface Water Supporting Map Package #3 (35 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X445	12/6/1999	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X446	12/6/1999	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X447	12/6/1999	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X448	12/6/1999	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X449	12/6/1999	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X450	12/6/1999	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X451	12/6/1999	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1		1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X452	12/6/1999	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1		1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X453	12/6/1999	Discrete	Columbia River	Rich.Pmphs HRM 43.9	1		1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X454	12/6/1999	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1		1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106M8	9/19/2000	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106M9	9/19/2000	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N0	9/19/2000	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N1	9/19/2000	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N2	9/19/2000	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N3	9/19/2000	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N4	9/19/2000	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1		1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N5	9/19/2000	Discrete	Columbia River	Rich.Pmphs HRM 43.9	1		1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N6	9/19/2000	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1		1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N7	9/19/2000	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1		1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL3	9/13/2001	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL4	9/13/2001	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL5	9/13/2001	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL6	9/13/2001	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL7	9/13/2001	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL8	9/15/2001	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200

Table D-4. Organics Data in Surface Water Supporting Map Package #3 (35 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL9	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1		1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM0	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 43.9	1		1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM1	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1		1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM2	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1		1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15981	9/10/2002	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15982	9/10/2002	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15983	9/10/2002	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15984	9/10/2002	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15985	9/10/2002	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	1,1,2-Trichloroethane	0.00027	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15986	9/10/2002	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	1,1,2-Trichloroethane	0.00063	mg/L	J	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15987	9/10/2002	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1		1,1,2-Trichloroethane	0.00078	mg/L	J	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15988	9/10/2002	Discrete	Columbia River	Rich.Pmphs HRM 43.9	1		1,1,2-Trichloroethane	0.00088	mg/L	J	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15989	9/10/2002	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1		1,1,2-Trichloroethane	0.00073	mg/L	J	0.000114	1.20000	0.000200

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15989	9/10/2002	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1		1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15990	9/10/2002	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1		1,1,2-Trichloroethane	0.00069	mg/L	J	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15990	9/10/2002	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1		1,1,2-Trichloroethane	0.00031	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B450	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-1 HRM46.4	1		1,1,2-Trichloroethane	0.00021	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B451	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-2 HRM46.4	1		1,1,2-Trichloroethane	0.00021	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B452	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-3 HRM46.4	1		1,1,2-Trichloroethane	0.00021	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B453	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-5 HRM46.4	1		1,1,2-Trichloroethane	0.00021	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B454	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-7 HRM46.4	1		1,1,2-Trichloroethane	0.00021	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B455	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-10 HRM46.4	1		1,1,2-Trichloroethane	0.00021	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B456	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 43.5	1		1,1,2-Trichloroethane	0.00021	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B457	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 43.9	1		1,1,2-Trichloroethane	0.00021	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B458	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 45.0	1		1,1,2-Trichloroethane	0.00021	mg/L	U	0.000114	1.20000	0.000200
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B459	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 45.8	1		1,1,2-Trichloroethane	0.00021	mg/L	U	0.000114	1.20000	0.000200

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X445	12/6/1999	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X446	12/6/1999	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X447	12/6/1999	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X448	12/6/1999	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X449	12/6/1999	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X450	12/6/1999	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X451	12/6/1999	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1		1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X452	12/6/1999	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1		1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X453	12/6/1999	Discrete	Columbia River	Rich.Pmphs HRM 43.9	1		1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X454	12/6/1999	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1		1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106M8	9/19/2000	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106M9	9/19/2000	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N0	9/19/2000	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N1	9/19/2000	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N2	9/19/2000	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N3	9/19/2000	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N4	9/19/2000	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1		1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N5	9/19/2000	Discrete	Columbia River	Rich.Pmphs HRM 43.9	1		1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N6	9/19/2000	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1		1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N7	9/19/2000	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1		1,2-Dichloroethane	0.00017	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL3	9/13/2001	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL4	9/13/2001	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL5	9/13/2001	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL6	9/13/2001	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL7	9/13/2001	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL8	9/15/2001	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123

Table D-4. Organics Data in Surface Water Supporting Map Package #3 (35 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL9	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1		1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM0	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 43.9	1		1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM1	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1		1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM2	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1		1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15981	9/10/2002	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15982	9/10/2002	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15983	9/10/2002	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15984	9/10/2002	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15985	9/10/2002	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	1,2-Dichloroethane	0.00027	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15986	9/10/2002	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	1,2-Dichloroethane	0.00085	mg/L	J	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15987	9/10/2002	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1		1,2-Dichloroethane	0.00100	mg/L		0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15988	9/10/2002	Discrete	Columbia River	Rich.Pmphs HRM 43.9	1		1,2-Dichloroethane	0.00110	mg/L		0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15989	9/10/2002	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1		1,2-Dichloroethane	0.00095	mg/L	J	0.000093	0.91000	0.000123

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15990	9/10/2002	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1		1,2-Dichloroethane	0.00092	mg/L	J	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B450	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-1 HRM46.4	1		1,2-Dichloroethane	0.00021	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B451	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-2 HRM46.4	1		1,2-Dichloroethane	0.00021	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B452	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-3 HRM46.4	1		1,2-Dichloroethane	0.00021	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B453	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-5 HRM46.4	1		1,2-Dichloroethane	0.00021	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B454	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-7 HRM46.4	1		1,2-Dichloroethane	0.00021	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B455	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-10 HRM46.4	1		1,2-Dichloroethane	0.00021	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B456	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 43.5	1		1,2-Dichloroethane	0.00021	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B457	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 43.9	1		1,2-Dichloroethane	0.00021	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B458	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 45.0	1		1,2-Dichloroethane	0.00021	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B459	9/15/2004	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 45.8	1		1,2-Dichloroethane	0.00021	mg/L	U	0.000093	0.91000	0.000123
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X445	12/6/1999	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X446	12/6/1999	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X447	12/6/1999	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X448	12/6/1999	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X449	12/6/1999	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X450	12/6/1999	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X451	12/6/1999	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1		Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X452	12/6/1999	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1		Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X453	12/6/1999	Discrete	Columbia River	Rich.Pmphs HRM 43.9	1		Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X454	12/6/1999	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1		Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106M8	9/19/2000	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106M9	9/19/2000	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N0	9/19/2000	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N1	9/19/2000	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N2	9/19/2000	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N3	9/19/2000	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N4	9/19/2000	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1		Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N5	9/19/2000	Discrete	Columbia River	Rich.Pmphs HRM 43.9	1		Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N6	9/19/2000	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1		Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N7	9/19/2000	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1		Chloroform	0.00023	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL3	9/13/2001	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL4	9/13/2001	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL5	9/13/2001	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL6	9/13/2001	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL7	9/13/2001	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL8	9/15/2001	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL9	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1		Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM0	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 43.9	1		Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM1	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1		Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM2	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1		Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15981	9/10/2002	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15982	9/10/2002	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15983	9/10/2002	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15984	9/10/2002	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15985	9/10/2002	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	Chloroform	0.00021	mg/L	U	0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15986	9/10/2002	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Chloroform	0.00370	mg/L		0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15987	9/10/2002	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1		Chloroform	0.00480	mg/L		0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15988	9/10/2002	Discrete	Columbia River	Rich.Pmphs HRM 43.9	1		Chloroform	0.00550	mg/L		0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15989	9/10/2002	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1		Chloroform	0.00440	mg/L		0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15990	9/10/2002	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1		Chloroform	0.00370	mg/L		0.000082	0.02800	0.000166
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X445	12/6/1999	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X446	12/6/1999	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X447	12/6/1999	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X448	12/6/1999	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X449	12/6/1999	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X450	12/6/1999	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X451	12/6/1999	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X452	12/6/1999	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X453	12/6/1999	Discrete	Columbia River	Rich.Pmphs HRM 43.9	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0X454	12/6/1999	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106M8	9/19/2000	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106M9	9/19/2000	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N0	9/19/2000	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N1	9/19/2000	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N2	9/19/2000	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N3	9/19/2000	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N4	9/19/2000	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N5	9/19/2000	Discrete	Columbia River	Rich.Pmphs HRM 43.9	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N6	9/19/2000	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B106N7	9/19/2000	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL3	9/13/2001	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL4	9/13/2001	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL5	9/13/2001	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL6	9/13/2001	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL7	9/13/2001	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL8	9/15/2001	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VL9	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1		Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028

Table D-4. Organics Data in Surface Water Supporting Map Package #3 (35 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM0	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 43.9	1		Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM1	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1		Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12VM2	9/13/2001	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1		Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15981	9/10/2002	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15982	9/10/2002	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15983	9/10/2002	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15984	9/10/2002	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15985	9/10/2002	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15986	9/10/2002	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15987	9/10/2002	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1		Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15988	9/10/2002	Discrete	Columbia River	Rich.Pmphs HRM 43.9	1		Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15989	9/10/2002	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1		Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15990	9/10/2002	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1		Trichloroethene	0.00029	mg/L	U	0.000095	0.04700	0.000028

Table D-4. Organics Data in Surface Water Supporting Map Package #3 (35 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HK9	9/9/2003	Discrete	Columbia River	Rich.Pmphs-1 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HL0	9/9/2003	Discrete	Columbia River	Rich.Pmphs-2 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HL1	9/9/2003	Discrete	Columbia River	Rich.Pmphs-3 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HL2	9/9/2003	Discrete	Columbia River	Rich.Pmphs-5 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HL3	9/9/2003	Discrete	Columbia River	Rich.Pmphs-7 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HL4	9/9/2003	Discrete	Columbia River	Rich.Pmphs-10 HRM 46.4	1	coordinates estimated	Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HL5	9/9/2003	Discrete	Columbia River	Rich.Pmphs HRM 43.5	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HL7	9/9/2003	Discrete	Columbia River	Rich.Pmphs HRM 45.0	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17HL8	9/9/2003	Discrete	Columbia River	Rich.Pmphs HRM 45.8	1		Trichloroethene	0.00016	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DML5	9/14/2005	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-1 HRM46.4	1	571	Trichloroethene	0.00013	mg/L	U	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DMR6	9/14/2005	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-2 HRM46.4	1	321	Trichloroethene	0.00021	mg/L	JB	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DMR7	9/14/2005	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-3 HRM46.4	1	322	Trichloroethene	0.00017	mg/L	JB	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DMR8	9/14/2005	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-5 HRM46.4	1	323	Trichloroethene	0.00017	mg/L	JB	0.000095	0.04700	0.000028

Table D-4. Organics Data in Surface Water Supporting Map Package #3 (35 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DMR9	9/14/2005	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-7 HRM46.4	1	325	Trichloroethene	0.00017	mg/L	JB	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DMT0	9/14/2005	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS-10 HRM46.4	1	327	Trichloroethene	0.00019	mg/L	JB	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DMT1	9/14/2005	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 43.5	1	8223	Trichloroethene	0.00018	mg/L	JB	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DMT2	9/14/2005	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 43.9	1	8222	Trichloroethene	0.00017	mg/L	JB	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DMT3	9/14/2005	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 45.0	1	8221	Trichloroethene	0.00018	mg/L	JB	0.000095	0.04700	0.000028
ViewD	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DMT4	9/14/2005	TRANSECT, RAW GRAB	Columbia River	RICH.PMPHS HRM 45.8	1	8220	Trichloroethene	0.00013	mg/L	U	0.000095	0.04700	0.000028

Refer to Columbia River Component Data Evaluation Summary Report July 2006 WCH-91 for Category definitions.
Refer to Table D-6 for Lab Qualifier definitions.

Table D-5. Radionuclide Data in Sediment Supporting Map Package #4 (19 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DWT2	10/6/2005			300 AREA SPRING 42-7	1	APPROXIMATELY 80 YARDS ABOVE 331 OUTFALL.	Uranium-234	2.340	pCi/g		0.8365	5000.0000	1.1000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DWT2	10/6/2005			300 AREA SPRING 42-7	1	APPROXIMATELY 80 YARDS ABOVE 331 OUTFALL.	Uranium-238	2.250	pCi/g		0.8316	2000.0000	1.1000
ViewA	1999 Hanford Environmental Oversight Program Data Summary Report	1/1/2000	23522	8/3/1999	Grab	Columbia River	Above Priest Rapids Dam - Yakima County Shore	1		Uranium-234	1.210	pCi/g		0.8365	5000.0000	1.1000
ViewA	Hanford Environmental Oversight Program 2001 Data Summary Report	1/1/2002	26251	7/19/2001	Grab	Columbia River	Above Priest Rapids Dam - Yakima County Shore	1		Uranium-234	1.300	pCi/g		0.8365	5000.0000	1.1000
ViewA	Environmental Radiation Oversight Program - Database	1/1/2005	18296	8/15/1996	Grab	Columbia River	Above Priest Rapids Dam - Grant County Shore	1		Uranium-234	1.290	pCi/g		0.8365	5000.0000	1.1000
ViewA	Environmental Radiation Program 1992-1994 Annual Report	1/1/1999	12989	10/1/1992	Grab	Columbia River	Above Priest Rapids Dam - Grant County Shore	1		Uranium-234	1.610	pCi/g		0.8365	5000.0000	1.1000
ViewA	Environmental Radiation Program 1992-1994 Annual Report	1/1/1999	12992	10/1/1992	Grab	Columbia River	Above Priest Rapids Dam - Yakima County Shore	1		Uranium-234	1.220	pCi/g		0.8365	5000.0000	1.1000
ViewA	Environmental Radiation Program 1992-1994 Annual Report	1/1/1999	15827	9/22/1994	Grab	Columbia River	Above Priest Rapids Dam - Yakima County Shore	1		Uranium-234	1.140	pCi/g		0.8365	5000.0000	1.1000
ViewA	Hanford Environmental Oversight Program 2003 Data Summary Report	6/1/2005	30872	7/14/2003	Grab	Columbia River	Above Priest Rapids Dam - Grant County Shore	1		Uranium-234	1.320	pCi/g		0.8365	5000.0000	1.1000
ViewA	Hanford Environmental Oversight Program 2001 Data Summary Report	1/1/2002	26251	7/19/2001	Grab	Columbia River	Above Priest Rapids Dam - Yakima County Shore	1		Uranium-238	1.160	pCi/g		0.8316	2000.0000	1.1000
ViewA	Environmental Monitoring of Columbia River Sediments: Grain-Size Distribution and Contaminant Association	4/1/1995	B0BRT8	4/14/1994	Grab	Columbia River	Above Priest River Dam - 1/3 Grant County shore	1	coordinates estimated	Uranium-238	1.360	pCi/g		0.8316	2000.0000	1.1000
ViewA	Environmental Radiation Oversight Program - Database	1/1/2005	18296	8/15/1996	Grab	Columbia River	Above Priest Rapids Dam - Grant County Shore	1		Uranium-238	1.280	pCi/g		0.8316	2000.0000	1.1000

Table D-5. Radionuclide Data in Sediment Supporting Map Package #4 (19 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewA	Environmental Radiation Program 1992-1994 Annual Report	1/1/1999	12989	10/1/1992	Grab	Columbia River	Above Priest Rapids Dam - Grant County Shore	1		Uranium-238	1.310	pCi/g		0.8316	2000.0000	1.1000
ViewA	Hanford Environmental Oversight Program 2003 Data Summary Report	6/1/2005	30872	7/14/2003	Grab	Columbia River	Above Priest Rapids Dam - Grant County Shore	1		Uranium-238	1.270	pCi/g		0.8316	2000.0000	1.1000
ViewA	Hanford Site Environmental Report for Calendar Year 1993	1/1/1994	E124781	9/28/1993	Grab	Columbia River	PRD-1/3 GRANT SHORE	1		Uranium-238	1.270	pCi/g		0.8316	2000.0000	1.1000
ViewA	Hanford Site Environmental Report for Calendar Year 1994	1/1/1995	B0CDL7	9/22/1994	Grab	Columbia River	PRD-YAKIMA CNTY SHOR	1		Uranium-238	1.710	pCi/g		0.8316	2000.0000	1.1000
ViewA	Hanford Site Environmental Report for Calendar Year 1995	1/1/1996	B0G8V1	7/24/1995	Grab	Columbia River	PRD-GRANT COUNTY	1	coordinates estimated	Uranium-238	2.230	pCi/g		0.8316	2000.0000	1.1000
ViewA	Hanford Site Environmental Report for Calendar Year 1995	1/1/1996	B0G8V5	7/24/1995	Grab	Columbia River	PRD-2/3 GRANT SHORE	1		Uranium-238	1.820	pCi/g		0.8316	2000.0000	1.1000
ViewA	Hanford Site Environmental Report for Calendar Year 1996	1/1/1997	B0J5F8	8/15/1996	Grab	Columbia River	PRD-2/3 GRANT SHORE	1		Uranium-238	1.540	pCi/g		0.8316	2000.0000	1.1000
ViewB1	Environmental Radiation Oversight Program - Database	1/1/2005	17209	9/5/1995	Grab	Columbia River	Hanford Reach - 100-K Area	1		Uranium-234	2.010	pCi/g		0.8365	5000.0000	1.1000
ViewB1	Environmental Radiation Oversight Program - Database	1/1/2005	17209	9/5/1995	Grab	Columbia River	Hanford Reach - 100-K Area	1		Uranium-238	1.990	pCi/g		0.8316	2000.0000	1.1000
ViewB1	Hanford Site Environmental Report for Calendar Year 1995	1/1/1996	B0GJY7	9/5/1995	Grab	Columbia River	100-K SPRING	1	coordinates estimated	Uranium-238	1.530	pCi/g		0.8316	2000.0000	1.1000
ViewB1	Hanford Site Environmental Report for Calendar Year 1996	1/1/1997	B0J5H6	11/4/1996	Grab	Columbia River	100-B SPRING	1	coordinates estimated	Uranium-238	1.250	pCi/g		0.8316	2000.0000	1.1000
ViewB1	Hanford Site Environmental Report for Calendar Year 1997	1/1/1998	B0M7T8	10/23/1997	Grab	Columbia River	100-B SPRING	1	coordinates estimated	Uranium-238	1.230	pCi/g	U	0.8316	2000.0000	1.1000
ViewB2	100 Area Columbia River Sediment Sampling	1/1/1993	B07NH2	11/23/1992	Grab	Columbia River	Hanford Reach - Horn Area	1	TMA	Uranium-238	2.000	pCi/g		0.8316	2000.0000	1.1000
ViewB2	Environmental Radiation Program 1992-1994 Annual Report	1/1/1999	12645	6/30/1992	Grab	Columbia River	100N SHORE HGP	1		Uranium-238	1.560	pCi/g		0.8316	2000.0000	1.1000
ViewB3	Hanford Site Environmental Report for Calendar Year 1991	1/1/1992	E118322	11/27/1991	Grab	Columbia River	WHITE BLUFFS SLOUGH	1	coordinates estimated	Uranium-234	2.140	pCi/g		0.8365	5000.0000	1.1000
ViewB3	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14YM6	7/23/2002	Grab	Columbia River	WHITE BLUFFS SLOUGH	1	coordinates estimated	Uranium-234	1.620	pCi/g		0.8365	5000.0000	1.1000
ViewB3	100 Area Columbia River Sediment Sampling	1/1/1993	B07NC2	11/13/1992	Grab	Columbia River	Hanford Reach - 100-H Area	1	TMA	Uranium-238	1.200	pCi/g		0.8316	2000.0000	1.1000
ViewB3	100 Area Columbia River Sediment Sampling	1/1/1993	B07NC3	11/13/1992	Grab	Columbia River	Hanford Reach - 100-H Area	1	TMA	Uranium-238	1.200	pCi/g		0.8316	2000.0000	1.1000
ViewB3	100 Area Columbia River Sediment Sampling	1/1/1993	B07NC4	11/16/1992	Grab	Columbia River	Hanford Reach - F Slough	1	TMA	Uranium-238	2.000	pCi/g		0.8316	2000.0000	1.1000

Table D-5. Radionuclide Data in Sediment Supporting Map Package #4 (19 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewB3	Hanford Site Environmental Report for Calendar Year 1991	1/1/1992	E118322	11/27/1991	Grab	Columbia River	WHITE BLUFFS SLOUGH	1	coordinates estimated	Uranium-238	2.300	pCi/g		0.8316	2000.0000	1.1000
ViewB3	Hanford Site Environmental Report for Calendar Year 1993	1/1/1994	E124525	9/2/1993	Grab	Columbia River	WHITE BLUFFS SLOUGH	1	coordinates estimated	Uranium-238	1.370	pCi/g		0.8316	2000.0000	1.1000
ViewB3	Hanford Site Environmental Report for Calendar Year 1995	1/1/1996	B0G8V9	7/21/1995	Grab	Columbia River	WHITE BLUFFS SLOUGH	1	coordinates estimated	Uranium-238	1.660	pCi/g		0.8316	2000.0000	1.1000
ViewB3	Hanford Site Environmental Report for Calendar Year 1996	1/1/1997	B0J5G2	8/20/1996	Grab	Columbia River	WHITE BLUFFS SLOUGH	1	coordinates estimated	Uranium-238	1.870	pCi/g		0.8316	2000.0000	1.1000
ViewB3	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B14YM6	7/23/2002	Grab	Columbia River	WHITE BLUFFS SLOUGH	1	coordinates estimated	Uranium-238	1.320	pCi/g		0.8316	2000.0000	1.1000
ViewB4	Environmental Radiation Program 1992-1994 Annual Report	1/1/1999	13166	11/16/1992	Grab	Columbia River	F Slough	1		Uranium-234	1.500	pCi/g		0.8365	5000.0000	1.1000
ViewB4	Hanford Environmental Oversight Program 2002 Data Summary Report	1/1/2003	29695	10/29/2002	Grab	Columbia River	100F SPRING 207-1	1		Uranium-234	1.300	pCi/g		0.8365	5000.0000	1.1000
ViewB4	Hanford Site Environmental Report for Calendar Year 1991	1/1/1992	E118321	12/2/1991	Grab	Columbia River	F Slough	1		Uranium-234	1.470	pCi/g		0.8365	5000.0000	1.1000
ViewB4	Hanford Site Environmental Report for Calendar Year 1991	1/1/1992	E118323	11/27/1991	Grab	Columbia River	HANFORD SLOUGH	1		Uranium-234	2.010	pCi/g		0.8365	5000.0000	1.1000
ViewB4	100 Area Columbia River Sediment Sampling	1/1/1993	B07NB9	11/12/1992	Grab	Columbia River	Hanford Reach - F Slough	1	TMA	Uranium-238	1.300	pCi/g		0.8316	2000.0000	1.1000
ViewB4	Environmental Monitoring of Columbia River Sediments: Grain-Size Distribution and Contaminant Association	4/1/1995	B0BRV6	4/15/1994	Grab	Columbia River	F Slough	1	coordinates estimated	Uranium-238	1.370	pCi/g		0.8316	2000.0000	1.1000
ViewB4	Environmental Radiation Program 1992-1994 Annual Report	1/1/1999	13166	11/16/1992	Grab	Columbia River	F Slough	1		Uranium-238	1.400	pCi/g		0.8316	2000.0000	1.1000
ViewB4	Hanford Environmental Oversight Program 2002 Data Summary Report	1/1/2003	29695	10/29/2002	Grab	Columbia River	100F SPRING 207-1	1		Uranium-238	1.200	pCi/g		0.8316	2000.0000	1.1000
ViewB4	Hanford Site Environmental Report for Calendar Year 1991	1/1/1992	E118321	12/2/1991	Grab	Columbia River	F Slough	1		Uranium-238	1.400	pCi/g		0.8316	2000.0000	1.1000
ViewB4	Hanford Site Environmental Report for Calendar Year 1991	1/1/1992	E118323	11/27/1991	Grab	Columbia River	HANFORD SLOUGH	1		Uranium-238	2.110	pCi/g		0.8316	2000.0000	1.1000
ViewB4	Hanford Site Environmental Report for Calendar Year 1995	1/1/1996	B0G8W1	7/21/1995	Grab	Columbia River	HANFORD SLOUGH	1		Uranium-238	2.380	pCi/g		0.8316	2000.0000	1.1000
ViewB4	Hanford Site Environmental Report for Calendar Year 1995	1/1/1996	B0GKL4	9/12/1995	Grab	Columbia River	100-F SPRING	1	coordinates estimated	Uranium-238	1.190	pCi/g		0.8316	2000.0000	1.1000
ViewB4	Hanford Site Environmental Report for Calendar Year 1996	1/1/1997	B0J5G4	8/20/1996	Grab	Columbia River	F Slough	1		Uranium-238	1.390	pCi/g		0.8316	2000.0000	1.1000
ViewB4	Hanford Site Environmental Report for Calendar Year 1996	1/1/1997	B0J5G6	8/20/1996	Grab	Columbia River	HANFORD SLOUGH	1		Uranium-238	1.690	pCi/g		0.8316	2000.0000	1.1000
ViewB4	Hanford Site Environmental Report for Calendar Year 1996	1/1/1997	B0J5H8	11/11/1996	Grab	Columbia River	100-F SPRING	1	coordinates estimated	Uranium-238	1.420	pCi/g		0.8316	2000.0000	1.1000
ViewC	100/300 Areas RCBRA	6/11/2007	J11141	2/8/2006	Grab	300 AREA	URANIUM SITE 1	1		Uranium-234	1.600	pCi/g	NA	0.8365	5000.0000	1.1000

Table D-5. Radionuclide Data in Sediment Supporting Map Package #4 (19 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewC	100/300 Areas RCBRA	6/11/2007	J11142	2/8/2006	Grab	300 AREA	URANIUM SITE 2	1		Uranium-234	1.710	pCi/g	NA	0.8365	5000.0000	1.1000
ViewC	100/300 Areas RCBRA	6/11/2007	J11737	2/19/2006	Grab	300 AREA	URANIUM SITE 4	1		Uranium-234	4.310	pCi/g	B	0.8365	5000.0000	1.1000
ViewC	100/300 Areas RCBRA	6/11/2007	J11738	2/19/2006	Grab	300 AREA	URANIUM SITE 9	1		Uranium-234	1.570	pCi/g	B	0.8365	5000.0000	1.1000
ViewC	100/300 Areas RCBRA	6/11/2007	J11741	2/13/2006	Grab	300 AREA	URANIUM SITE 8	1		Uranium-234	1.460	pCi/g	NA	0.8365	5000.0000	1.1000
ViewC	100/300 Areas RCBRA	6/11/2007	J11742	2/13/2006	Grab	300 AREA	URANIUM SITE 3	1		Uranium-234	2.350	pCi/g	NA	0.8365	5000.0000	1.1000
ViewC	100/300 Areas RCBRA	6/11/2007	J11743	2/13/2006	Grab	300 AREA	URANIUM SITE 5	1		Uranium-234	1.460	pCi/g	NA	0.8365	5000.0000	1.1000
ViewC	Citizens Monitoring and Technical Assessment - Analysis of Chemical Contaminants in Hanford Reach Biota and Environmental Materials at the Perimeter of the Hanford Nuclear Reservation and on the Columbia River	6/1/2005	HR037-300	8/4/2004	Grab	Columbia River	300 Area - Upstream	1		Uranium-234	1.960	pCi/g		0.8365	5000.0000	1.1000
ViewC	Citizens Monitoring and Technical Assessment - Analysis of Chemical Contaminants in Hanford Reach Biota and Environmental Materials at the Perimeter of the Hanford Nuclear Reservation and on the Columbia River	6/1/2005	HR046-300	8/4/2004	Grab	Columbia River	Hanford Reach - 300 Area	1		Uranium-234	2.960	pCi/g		0.8365	5000.0000	1.1000
ViewC	Hanford Environmental Oversight Program 2000 Data Summary Report	1/1/2001	24751	9/27/2000	Grab	Columbia River	HANFORD SPRING 28-2	1	estimated	Uranium-234	1.200	pCi/g		0.8365	5000.0000	1.1000
ViewC	Hanford Environmental Oversight Program 2000 Data Summary Report	1/1/2001	24752	9/27/2000	Grab	Columbia River	300 SPR MILE 42.2	1		Uranium-234	2.300	pCi/g		0.8365	5000.0000	1.1000
ViewC	Environmental Radiation Oversight Program - Database	1/1/2005	17211	9/5/1995	Grab	Columbia River	300 SPR MILE 42.2	1		Uranium-234	4.480	pCi/g		0.8365	5000.0000	1.1000
ViewC	Environmental Radiation Oversight Program - Database	1/1/2005	33224	10/25/2004	Grab	Columbia River	300 SPR MILE 42.2	1	coordinates estimated	Uranium-234	3.570	pCi/g		0.8365	5000.0000	1.1000
ViewC	Environmental Radiation Program 1992-1994 Annual Report	1/1/1999	12913	9/14/1992	Grab	Columbia River	300 FF-5	1	coordinates estimated	Uranium-234	1.300	pCi/g		0.8365	5000.0000	1.1000
ViewC	Environmental Radiation Program 1992-1994 Annual Report	1/1/1999	12914	9/14/1992	Grab	Columbia River	300 FF-5	1	coordinates estimated	Uranium-234	3.500	pCi/g		0.8365	5000.0000	1.1000
ViewC	Hanford Environmental Oversight Program 2001 Data Summary Report	1/1/2002	27651	8/27/2001	Grab	Columbia River	300 SPR MILE 42.2	1		Uranium-234	2.710	pCi/g		0.8365	5000.0000	1.1000
ViewC	Hanford Environmental Oversight Program 2003 Data Summary Report	6/1/2005	30932	10/13/2003	Grab	Columbia River	300 SPR MILE 42.2	1		Uranium-234	2.360	pCi/g		0.8365	5000.0000	1.1000
ViewC	Hanford Environmental Oversight Program 2003 Data Summary Report	6/1/2005	30939	10/13/2003	Grab	Columbia River	300 SPR MILE 42.2	1	coordinates estimated	Uranium-234	2.200	pCi/g		0.8365	5000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 1991	1/1/1992	E117684	8/8/1991	Grab	Columbia River	North 300 Area	1	coordinates estimated	Uranium-234	1.110	pCi/g		0.8365	5000.0000	1.1000

Table D-5. Radionuclide Data in Sediment Supporting Map Package #4 (19 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WDL8	11/1/1999	Grab	Columbia River	300 AREA SPRING 42-2	1		Uranium-234	2.560	pCi/g		0.8365	5000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WDL8	11/1/1999	Grab	Columbia River	300 AREA SPRING 42-2	1		Uranium-234	2.560	pCi/g		0.8365	5000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WDR2	11/1/1999	Grab	Columbia River	300 AREA SPR DR 42-2	1		Uranium-234	3.890	pCi/g		0.8365	5000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WDR2	11/1/1999	Grab	Columbia River	300 AREA SPR DR 42-2	1		Uranium-234	3.890	pCi/g		0.8365	5000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10908	9/27/2000	Grab	Columbia River	300 AREA SPRING 42-2	1		Uranium-234	1.970	pCi/g		0.8365	5000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10922	9/27/2000	Grab	Columbia River	300 AREA SPR DR 42-2	1		Uranium-234	3.010	pCi/g		0.8365	5000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C47	10/7/2002	Grab	Columbia River	300 AREA SPR DR 42-2	1		Uranium-234	11.300	pCi/g		0.8365	5000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17J20	10/13/2003	Grab	Columbia River	300 AREA SPRING 42-2	1		Uranium-234	1.420	pCi/g		0.8365	5000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17J59	10/13/2003	Grab	Columbia River	300 AREA SPR DR 42-2	1		Uranium-234	1.520	pCi/g		0.8365	5000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFN9	10/25/2004		Columbiia River	300 AREA SPRING 42-2	1		Uranium-234	2.410	pCi/g		0.8365	5000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFR3	10/25/2004		Columbiia River	300 AREA SPR DR 42-2	1		Uranium-234	4.070	pCi/g		0.8365	5000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DWR0	10/6/2005		Columbiia River	300 AREA SPRING 42-2	1		Uranium-234	2.050	pCi/g		0.8365	5000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DWR2	10/6/2005		Columbiia River	300 AREA SPR DR 42-2	1		Uranium-234	3.280	pCi/g		0.8365	5000.0000	1.1000
ViewC	100/300 Areas RCBRA	6/11/2007	J11141	2/8/2006	Grab	300 AREA	URANIUM SITE 1	1		Uranium-238	1.530	pCi/g	NA	0.8316	2000.0000	1.1000
ViewC	100/300 Areas RCBRA	6/11/2007	J11142	2/8/2006	Grab	300 AREA	URANIUM SITE 2	1		Uranium-238	1.540	pCi/g	NA	0.8316	2000.0000	1.1000
ViewC	100/300 Areas RCBRA	6/11/2007	J11736	2/13/2006	Grab	300 AREA	URANIUM SITE 6	1		Uranium-238	1.200	pCi/g	NA	0.8316	2000.0000	1.1000
ViewC	100/300 Areas RCBRA	6/11/2007	J11737	2/19/2006	Grab	300 AREA	URANIUM SITE 4	1		Uranium-238	5.120	pCi/g	B	0.8316	2000.0000	1.1000
ViewC	100/300 Areas RCBRA	6/11/2007	J11741	2/13/2006	Grab	300 AREA	URANIUM SITE 8	1		Uranium-238	1.160	pCi/g	NA	0.8316	2000.0000	1.1000
ViewC	100/300 Areas RCBRA	6/11/2007	J11742	2/13/2006	Grab	300 AREA	URANIUM SITE 3	1		Uranium-238	2.210	pCi/g	NA	0.8316	2000.0000	1.1000
ViewC	100/300 Areas RCBRA	6/11/2007	J11743	2/13/2006	Grab	300 AREA	URANIUM SITE 5	1		Uranium-238	1.350	pCi/g	NA	0.8316	2000.0000	1.1000

Table D-5. Radionuclide Data in Sediment Supporting Map Package #4 (19 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewC	Citizens Monitoring and Technical Assessment - Analysis of Chemical Contaminants in Hanford Reach Biota and Environmental Materials at the Perimeter of the Hanford Nuclear Reservation and on the Columbia River	6/1/2005	HR037-300	8/4/2004	Grab	Columbia River	300 Area - Upstream	1		Uranium-238	1.400	pCi/g		0.8316	2000.0000	1.1000
ViewC	Citizens Monitoring and Technical Assessment - Analysis of Chemical Contaminants in Hanford Reach Biota and Environmental Materials at the Perimeter of the Hanford Nuclear Reservation and on the Columbia River	6/1/2005	HR046-300	8/4/2004	Grab	Columbia River	Hanford Reach - 300 Area	1		Uranium-238	3.670	pCi/g		0.8316	2000.0000	1.1000
ViewC	Columbia Generating Station 2002 Annual Radiological Environmental Operating Report	1/1/2003	L19569-2	10/29/2002	Grab	Columbia River	CGS (WNP-2) STA 33	1	Map provided for locations.	Uranium-238	3.049	pCi/g	U	0.8316	2000.0000	1.1000
ViewC	Columbia Generating Station 2002 Annual Radiological Environmental Operating Report	1/1/2003	L19569-3	10/29/2002	Grab	Columbia River	CGS (WNP-2) STA 34	1	Map provided for locations.	Uranium-238	2.021	pCi/g	U	0.8316	2000.0000	1.1000
ViewC	Hanford Environmental Oversight Program 2000 Data Summary Report	1/1/2001	24751	9/27/2000	Grab	Columbia River	HANFORD SPRING 28-2	1	estimated	Uranium-238	1.200	pCi/g		0.8316	2000.0000	1.1000
ViewC	Hanford Environmental Oversight Program 2000 Data Summary Report	1/1/2001	24752	9/27/2000	Grab	Columbia River	300 SPR MILE 42.2	1		Uranium-238	2.200	pCi/g		0.8316	2000.0000	1.1000
ViewC	Environmental Radiation Oversight Program - Database	1/1/2005	17211	9/5/1995	Grab	Columbia River	300 SPR MILE 42.2	1		Uranium-238	4.280	pCi/g		0.8316	2000.0000	1.1000
ViewC	Environmental Radiation Oversight Program - Database	1/1/2005	33224	10/25/2004	Grab	Columbia River	300 SPR MILE 42.2	1	coordinates estimated	Uranium-238	3.280	pCi/g		0.8316	2000.0000	1.1000
ViewC	Environmental Radiation Program 1992-1994 Annual Report	1/1/1999	12913	9/14/1992	Grab	Columbia River	300 FF-5	1	coordinates estimated	Uranium-238	1.200	pCi/g		0.8316	2000.0000	1.1000
ViewC	Environmental Radiation Program 1992-1994 Annual Report	1/1/1999	12914	9/14/1992	Grab	Columbia River	300 FF-5	1	coordinates estimated	Uranium-238	3.100	pCi/g		0.8316	2000.0000	1.1000
ViewC	Hanford Environmental Oversight Program 2001 Data Summary Report	1/1/2002	27651	8/27/2001	Grab	Columbia River	300 SPR MILE 42.2	1		Uranium-238	2.530	pCi/g		0.8316	2000.0000	1.1000
ViewC	Hanford Environmental Oversight Program 2003 Data Summary Report	6/1/2005	30932	10/13/2003	Grab	Columbia River	300 SPR MILE 42.2	1		Uranium-238	2.280	pCi/g		0.8316	2000.0000	1.1000
ViewC	Hanford Environmental Oversight Program 2003 Data Summary Report	6/1/2005	30939	10/13/2003	Grab	Columbia River	300 SPR MILE 42.2	1	coordinates estimated	Uranium-238	2.090	pCi/g		0.8316	2000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 1993	1/1/1994	E124607	9/20/1993	Grab	Columbia River	300 AREA SPRING 42-2	1		Uranium-238	4.240	pCi/g		0.8316	2000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 1994	1/1/1995	B0CDM6	8/29/1994	Grab	Columbia River	300 AREA SPRING 42-2	1		Uranium-238	3.200	pCi/g		0.8316	2000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 1995	1/1/1996	B0G8W4	9/5/1995	Grab	Columbia River	HANFORD SPRING 28-2	1		Uranium-238	1.880	pCi/g		0.8316	2000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 1996	1/1/1997	B0J5H1	11/11/1996	Grab	Columbia River	HANFORD SPRING 28-2	1		Uranium-238	1.320	pCi/g		0.8316	2000.0000	1.1000

Table D-5. Radionuclide Data in Sediment Supporting Map Package #4 (19 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewC	Hanford Site Environmental Report for Calendar Year 1996	1/1/1997	B0J5H2	11/21/1996	Grab	Columbia River	300 AREA SPRING 42-2	1		Uranium-238	1.220	pCi/g		0.8316	2000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 1997	1/1/1998	B0M7V2	10/27/1997	Grab	Columbia River	HANFORD SPRING 28-2	1		Uranium-238	1.600	pCi/g		0.8316	2000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 1997	1/1/1998	B0M7V3	10/27/1997	Grab	Columbia River	300 AREA SPRING 42-2	1		Uranium-238	1.980	pCi/g		0.8316	2000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WDL8	11/1/1999	Grab	Columbia River	300 AREA SPRING 42-2	1		Uranium-238	2.240	pCi/g		0.8316	2000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WDL8	11/1/1999	Grab	Columbia River	300 AREA SPRING 42-2	1		Uranium-238	2.240	pCi/g		0.8316	2000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WDR2	11/1/1999	Grab	Columbia River	300 AREA SPR DR 42-2	1		Uranium-238	3.710	pCi/g		0.8316	2000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WDR2	11/1/1999	Grab	Columbia River	300 AREA SPR DR 42-2	1		Uranium-238	3.710	pCi/g		0.8316	2000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10908	9/27/2000	Grab	Columbia River	300 AREA SPRING 42-2	1		Uranium-238	1.860	pCi/g		0.8316	2000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10922	9/27/2000	Grab	Columbia River	300 AREA SPR DR 42-2	1		Uranium-238	2.620	pCi/g		0.8316	2000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C47	10/7/2002	Grab	Columbia River	300 AREA SPR DR 42-2	1		Uranium-238	9.970	pCi/g		0.8316	2000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17J20	10/13/2003	Grab	Columbia River	300 AREA SPRING 42-2	1		Uranium-238	1.300	pCi/g		0.8316	2000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17J59	10/13/2003	Grab	Columbia River	300 AREA SPR DR 42-2	1		Uranium-238	1.460	pCi/g		0.8316	2000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFN9	10/25/2004		Columbiia River	300 AREA SPRING 42-2	1		Uranium-238	2.410	pCi/g		0.8316	2000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFR3	10/25/2004		Columbiia River	300 AREA SPR DR 42-2	1		Uranium-238	3.750	pCi/g		0.8316	2000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DWR0	10/6/2005		Columbiia River	300 AREA SPRING 42-2	1		Uranium-238	1.850	pCi/g		0.8316	2000.0000	1.1000
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DWR2	10/6/2005		Columbiia River	300 AREA SPR DR 42-2	1		Uranium-238	2.910	pCi/g		0.8316	2000.0000	1.1000
ViewD	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-B-1-30.5-33.0	8/5/1976	Core	Columbia River	Port Kelly	3		Cobalt-60	5.455	pCi/g		0.0054	1460.0000	1.4000
ViewD	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-B-1-33.0-35.6	8/5/1976	Core	Columbia River	Port Kelly	3		Cobalt-60	5.318	pCi/g		0.0054	1460.0000	1.4000
ViewD	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-B-1-35.6-38.1	8/5/1976	Core	Columbia River	Port Kelly	3		Cobalt-60	4.909	pCi/g		0.0054	1460.0000	1.4000
ViewD	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-B-1-38.1-40.6	8/5/1976	Core	Columbia River	Port Kelly	3		Cobalt-60	4.150	pCi/g		0.0054	1460.0000	1.4000
ViewD	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-B-1-40.6-43.2	8/5/1976	Core	Columbia River	Port Kelly	3		Cobalt-60	2.982	pCi/g		0.0054	1460.0000	1.4000

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-B-1-43.2-47.0	8/5/1976	Core	Columbia River	Port Kelly	3		Cobalt-60	1.895	pCi/g		0.0054	1460.0000	1.4000
ViewD	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-B-2-10.2-20.3	9/9/1976	Core	Columbia River	Port Kelly	3		Cobalt-60	1.641	pCi/g		0.0054	1460.0000	1.4000
ViewD	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-B-2-101.6-111.8	9/9/1976	Core	Columbia River	Port Kelly	3		Cobalt-60	3.014	pCi/g		0.0054	1460.0000	1.4000
ViewD	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-B-2-111.8-121.9	9/9/1976	Core	Columbia River	Port Kelly	3		Cobalt-60	2.855	pCi/g		0.0054	1460.0000	1.4000
ViewD	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-B-2-121.9-132.1	9/9/1976	Core	Columbia River	Port Kelly	3		Cobalt-60	1.509	pCi/g		0.0054	1460.0000	1.4000
ViewD	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-B-2-20.3-30.5	9/9/1976	Core	Columbia River	Port Kelly	3		Cobalt-60	2.855	pCi/g		0.0054	1460.0000	1.4000
ViewD	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-B-2-30.5-40.6	9/9/1976	Core	Columbia River	Port Kelly	3		Cobalt-60	7.636	pCi/g		0.0054	1460.0000	1.4000
ViewD	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-B-2-40.6-50.8	9/9/1976	Core	Columbia River	Port Kelly	3		Cobalt-60	6.455	pCi/g		0.0054	1460.0000	1.4000
ViewD	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-B-2-50.8-61.0	9/9/1976	Core	Columbia River	Port Kelly	3		Cobalt-60	6.591	pCi/g		0.0054	1460.0000	1.4000
ViewD	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-B-2-61.0-71.1	9/9/1976	Core	Columbia River	Port Kelly	3		Cobalt-60	2.291	pCi/g		0.0054	1460.0000	1.4000
ViewD	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-B-2-71.1-81.3	9/9/1976	Core	Columbia River	Port Kelly	3		Cobalt-60	1.705	pCi/g		0.0054	1460.0000	1.4000
ViewD	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-B-2-81.3-91.4	9/9/1976	Core	Columbia River	Port Kelly	3		Cobalt-60	4.177	pCi/g		0.0054	1460.0000	1.4000
ViewD	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-B-2-91.4-101.6	9/9/1976	Core	Columbia River	Port Kelly	3		Cobalt-60	4.591	pCi/g		0.0054	1460.0000	1.4000
ViewD	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-B-1-20.3-22.9	8/5/1976	Core	Columbia River	Port Kelly	3		Cobalt-60	1.791	pCi/g		0.0054	1460.0000	1.4000
ViewD	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-B-1-22.9-25.4	8/5/1976	Core	Columbia River	Port Kelly	3		Cobalt-60	2.105	pCi/g		0.0054	1460.0000	1.4000
ViewD	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-B-1-25.4-27.6	8/5/1976	Core	Columbia River	Port Kelly	3		Cobalt-60	3.809	pCi/g		0.0054	1460.0000	1.4000
ViewD	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-B-1-27.6-30.5	8/5/1976	Core	Columbia River	Port Kelly	3		Cobalt-60	5.864	pCi/g		0.0054	1460.0000	1.4000
ViewD	Hanford Site Environmental Report for Calendar Year 1991	1/1/1992	E118324	12/2/1991	Grab	Columbia River	Richland, WA	1		Uranium-234	1.690	pCi/g		0.8365	5000.0000	1.1000
ViewD	Hanford Site Environmental Report for Calendar Year 1991	1/1/1992	E118324	12/2/1991	Grab	Columbia River	Richland, WA	1		Uranium-238	1.620	pCi/g		0.8316	2000.0000	1.1000

Table D-5. Radionuclide Data in Sediment Supporting Map Package #4 (19 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewD	Hanford Site Environmental Report for Calendar Year 1992	1/1/1993	E121544	9/22/1992	Grab	Columbia River	Richland, WA	1		Uranium-238	1.160	pCi/g		0.8316	2000.0000	1.1000
ViewD	Hanford Site Environmental Report for Calendar Year 1995	1/1/1996	B0G8W2	7/21/1995	Grab	Columbia River	Richland, WA	1		Uranium-238	1.590	pCi/g		0.8316	2000.0000	1.1000
ViewD	Hanford Site Environmental Report for Calendar Year 1996	1/1/1997	B0J5G8	8/20/1996	Grab	Columbia River	Richland, WA	1		Uranium-238	2.090	pCi/g		0.8316	2000.0000	1.1000
ViewD-Snake	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7T8	9/20/2004		Snake River	ICE HARBOR-MID RIVER	1		Uranium-234	1.910	pCi/g		0.8365	5000.0000	1.1000
ViewD-Snake	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1B7T8	9/20/2004		Snake River	ICE HARBOR-MID RIVER	1		Uranium-238	1.250	pCi/g		0.8316	2000.0000	1.1000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-F-27.9-30.5	8/18/1976	Core	Columbia River	Above McNary Dam	3		Cesium-137	6.455	pCi/g		0.5969	3120.0000	6.2000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-2-111.8-121.9	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cesium-137	6.636	pCi/g		0.5969	3120.0000	6.2000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-2-121.9-132.1	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cesium-137	6.545	pCi/g		0.5969	3120.0000	6.2000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-3-106.7-116.8	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cesium-137	6.500	pCi/g		0.5969	3120.0000	6.2000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-F-55.9-58.4	8/18/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	1.695	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-F-10.2-12.7	8/18/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	3.732	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-F-12.7-15.2	8/18/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	4.418	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-F-15.2-17.9	8/18/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	6.727	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-F-17.9-20.3	8/18/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	11.136	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-F-20.3-22.9	8/18/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	9.364	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-F-22.9-25.4	8/18/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	5.773	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-F-25.4-27.9	8/18/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	11.045	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-F-38.1-40.6	8/18/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	7.727	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-C-15.2-17.8	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	2.286	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-C-25.4-27.9	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	1.659	pCi/g		0.0054	1460.0000	1.4000

Table D-5. Radionuclide Data in Sediment Supporting Map Package #4 (19 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-C-27.9-30.5	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	1.986	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-C-30.5-33.0	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	1.773	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-C-33.0-35.6	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	1.836	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-C-38.1-40.6	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	1.541	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-C-40.6-43.2	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	1.405	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-C-43.2-45.7	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	1.700	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-C-45.7-48.3	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	3.905	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-C-48.3-50.8	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	4.036	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-C-50.8-53.5	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	4.309	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-C-53.5-55.9	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	3.623	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-C-55.9-58.4	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	4.068	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-C-58.4-63.5	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	6.682	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-D-0-2.5	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	1.777	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-D-10.2-12.7	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	6.727	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-D-12.7	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	4.909	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-D-15.2	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	3.568	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-D-17.8	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	3.582	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-D-2.5-5.1	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	3.082	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-D-20.3	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	6.182	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-D-22.9	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	5.455	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-D-25.4	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	2.832	pCi/g		0.0054	1460.0000	1.4000

Table D-5. Radionuclide Data in Sediment Supporting Map Package #4 (19 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-D-5.1-7.6	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	3.814	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-D-7.6-10.2	8/5/1976	Core	Columbia River	Refuge Island	3		Cobalt-60	4.682	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-F-27.9-30.5	8/18/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	9.182	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-F-30.5-33.0	8/18/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	6.955	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-F-33.0-35.6	8/18/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	6.045	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-F-35.6-38.1	8/18/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	6.364	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-F-40.6-43.2	8/18/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	5.455	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-F-43.2-45.7	8/18/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	4.864	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-F-45.7-48.3	8/18/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	2.564	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-F-48.3-50.8	8/18/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	1.991	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-F-50.8-53.5	8/18/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	1.764	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-F-53.5-55.9	8/18/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	1.464	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-F-7.6-10.2	8/18/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	1.691	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-1-10.2-12.7	8/5/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	1.582	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-1-12.7-15.2	8/5/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	2.105	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-1-15.2-17.8	8/5/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	2.936	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-1-17.8-20.3	8/5/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	3.368	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-1-20.3-22.9	8/5/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	2.809	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-1-22.9-25.4	8/5/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	2.586	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-1-25.4-27.9	8/5/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	2.973	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-1-27.9-30.5	8/5/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	4.055	pCi/g		0.0054	1460.0000	1.4000

Table D-5. Radionuclide Data in Sediment Supporting Map Package #4 (19 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-1-30.5-33.0	8/5/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	7.545	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-1-33.0-35.6	8/5/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	8.182	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-1-35.6-38.1	8/5/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	8.455	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-1-38.1-40.6	8/5/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	11.409	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-1-40.6-43.2	8/5/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	16.727	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-1-43.2-45.7	8/5/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	16.455	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-1-45.7-48.3	8/5/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	14.636	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-1-48.3-50.8	8/5/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	12.955	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-1-5.1-10.2	8/5/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	1.682	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-1-50.8-53.5	8/5/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	12.545	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-1-53.5-55.9	8/5/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	13.455	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-1-55.9-58.4	8/5/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	12.818	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-1-58.4-61.0	8/5/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	10.273	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-1-61.0-63.5	8/5/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	8.682	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-1-63.5-68.6	8/5/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	12.364	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-2-10.2-20.3	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	2.277	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-2-101.6-111.8	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	4.259	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-2-111.8-121.9	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	7.955	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-2-121.9-132.1	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	8.864	pCi/g		0.0054	1460.0000	1.4000

Table D-5. Radionuclide Data in Sediment Supporting Map Package #4 (19 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-2-132.1-142.2	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	5.136	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-2-142.2-152.4	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	5.727	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-2-152.4-162.6	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	2.950	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-2-162.6-172.7	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	1.905	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-2-20.3-30.5	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	2.700	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-2-30.5-40.6	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	5.682	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-2-40.6-50.8	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	10.318	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-2-50.8-61.0	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	14.182	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-2-61.0-71.1	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	12.545	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-2-71.1-81.3	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	8.455	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-2-81.3-91.4	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	11.682	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-2-91.4-101.6	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	7.045	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-3-106.7-116.8	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	7.545	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-3-116.8-127.0	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	7.727	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-3-127.0-137.2	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	5.409	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-3-137.2-147.3	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	2.545	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-3-147.3-157.4	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	1.686	pCi/g		0.0054	1460.0000	1.4000

Table D-5. Radionuclide Data in Sediment Supporting Map Package #4 (19 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-3-15.2-25.4	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	2.332	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-3-25.4-35.6	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	2.245	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-3-35.6-45.7	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	4.141	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-3-45.7-55.9	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	10.000	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-3-55.9-66.0	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	12.682	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-3-66.0-76.2	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	10.318	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-3-76.2-86.4	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	10.364	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-3-86.4-96.5	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	7.000	pCi/g		0.0054	1460.0000	1.4000
ViewE	Association of Hanford Origin Radionuclides with Columbia River Sediment	8/1/1977	M-G-3-96.5-106.7	9/9/1976	Core	Columbia River	Above McNary Dam	3		Cobalt-60	4.073	pCi/g		0.0054	1460.0000	1.4000
ViewE	1999 Hanford Environmental Oversight Program Data Summary Report	1/1/2000	23515	8/2/1999	Grab	Columbia River	Above McNary Dam - Oregon Shore	1		Uranium-234	1.270	pCi/g		0.8365	5000.0000	1.1000
ViewE	1999 Hanford Environmental Oversight Program Data Summary Report	1/1/2000	23516	8/2/1999	Grab	Columbia River	Above McNary Dam - 1/3 Oregon Shore	1		Uranium-234	1.300	pCi/g		0.8365	5000.0000	1.1000
ViewE	Hanford Environmental Oversight Program 2000 Data Summary Report	1/1/2001	24743	8/8/2000	Grab	Columbia River	Above McNary Dam - Oregon Shore	1		Uranium-234	1.230	pCi/g		0.8365	5000.0000	1.1000
ViewE	Hanford Environmental Oversight Program 2000 Data Summary Report	1/1/2001	24746	8/8/2000	Grab	Columbia River	Above McNary Dam - Washington Shore	1		Uranium-234	1.240	pCi/g		0.8365	5000.0000	1.1000
ViewE	Hanford Environmental Oversight Program 2001 Data Summary Report	1/1/2002	26248	7/23/2001	Grab	Columbia River	Above McNary Dam - Washington Shore	1		Uranium-234	1.200	pCi/g		0.8365	5000.0000	1.1000
ViewE	Environmental Radiation Oversight Program - Database	1/1/2005	16952	7/28/1995	Grab	Columbia River	Above McNary Dam - Oregon Shore	1		Uranium-234	1.170	pCi/g		0.8365	5000.0000	1.1000
ViewE	Environmental Radiation Oversight Program - Database	1/1/2005	16953	7/28/1995	Grab	Columbia River	Above McNary Dam - 1/3 Oregon Shore	1		Uranium-234	1.150	pCi/g		0.8365	5000.0000	1.1000
ViewE	Environmental Radiation Oversight Program - Database	1/1/2005	16954	7/28/1995	Grab	Columbia River	Above McNary Dam - 2/3 Oregon Shore	1		Uranium-234	1.180	pCi/g		0.8365	5000.0000	1.1000

Table D-5. Radionuclide Data in Sediment Supporting Map Package #4 (19 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewE	Environmental Radiation Oversight Program - Database	1/1/2005	18467	8/16/1996	Grab	Columbia River	Above McNary Dam - 1/3 Oregon Shore	1		Uranium-234	1.400	pCi/g		0.8365	5000.0000	1.1000
ViewE	Environmental Radiation Oversight Program - Database	1/1/2005	18468	8/16/1996	Grab	Columbia River	Above McNary Dam - 2/3 Oregon Shore	1		Uranium-234	1.300	pCi/g		0.8365	5000.0000	1.1000
ViewE	Environmental Radiation Oversight Program - Database	1/1/2005	18469	8/16/1996	Grab	Columbia River	Above McNary Dam - Oregon Shore	1		Uranium-234	1.200	pCi/g		0.8365	5000.0000	1.1000
ViewE	Environmental Radiation Oversight Program - Database	1/1/2005	19680	8/15/1997	Grab	Columbia River	Above McNary Dam - 1/3 Oregon Shore	1		Uranium-234	1.530	pCi/g		0.8365	5000.0000	1.1000
ViewE	Environmental Radiation Oversight Program - Database	1/1/2005	19681	8/15/1997	Grab	Columbia River	Above McNary Dam - 2/3 Oregon Shore	1		Uranium-234	1.340	pCi/g		0.8365	5000.0000	1.1000
ViewE	Environmental Radiation Oversight Program - Database	1/1/2005	19682	8/15/1997	Grab	Columbia River	Above McNary Dam - Oregon Shore	1		Uranium-234	1.420	pCi/g		0.8365	5000.0000	1.1000
ViewE	Environmental Radiation Oversight Program - Database	1/1/2005	20750	8/11/1998	Grab	Columbia River	Above McNary Dam - 1/3 Oregon Shore	1		Uranium-234	1.470	pCi/g		0.8365	5000.0000	1.1000
ViewE	Environmental Radiation Oversight Program - Database	1/1/2005	20751	8/11/1998	Grab	Columbia River	Above McNary Dam - 2/3 Oregon Shore	1		Uranium-234	1.310	pCi/g		0.8365	5000.0000	1.1000
ViewE	Environmental Radiation Oversight Program - Database	1/1/2005	20752	8/11/1998	Grab	Columbia River	Above McNary Dam - Oregon Shore	1		Uranium-234	1.220	pCi/g		0.8365	5000.0000	1.1000
ViewE	Environmental Radiation Oversight Program - Database	1/1/2005	33603	9/21/2004	Grab	Columbia River	Above McNary Dam - 2/3 Oregon Shore	1		Uranium-234	1.200	pCi/g		0.8365	5000.0000	1.1000
ViewE	Environmental Radiation Program 1992-1994 Annual Report	1/1/1999	12986	9/29/1992	Grab	Columbia River	Above McNary Dam - 1/3 Oregon Shore	1		Uranium-234	1.810	pCi/g		0.8365	5000.0000	1.1000
ViewE	Environmental Radiation Program 1992-1994 Annual Report	1/1/1999	12987	9/29/1992	Grab	Columbia River	Above McNary Dam - 2/3 Oregon Shore	1		Uranium-234	1.770	pCi/g		0.8365	5000.0000	1.1000
ViewE	Environmental Radiation Program 1992-1994 Annual Report	1/1/1999	12988	9/29/1992	Grab	Columbia River	Above McNary Dam - Washington Shore	1		Uranium-234	1.400	pCi/g		0.8365	5000.0000	1.1000
ViewE	Environmental Radiation Program 1992-1994 Annual Report	1/1/1999	15829	9/23/1994	Grab	Columbia River	Above McNary Dam - 1/3 Oregon Shore	1		Uranium-234	1.290	pCi/g		0.8365	5000.0000	1.1000
ViewE	Environmental Radiation Program 1992-1994 Annual Report	1/1/1999	15830	9/23/1994	Grab	Columbia River	Above McNary Dam - 2/3 Oregon Shore	1		Uranium-234	1.370	pCi/g		0.8365	5000.0000	1.1000

Table D-5. Radionuclide Data in Sediment Supporting Map Package #4 (19 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewE	Hanford Environmental Oversight Program 2002 Data Summary Report	1/1/2003	29043	7/19/2002	Grab	Columbia River	Above McNary Dam - Oregon Shore	1		Uranium-234	1.320	pCi/g		0.8365	5000.0000	1.1000
ViewE	Hanford Environmental Oversight Program 2002 Data Summary Report	1/1/2003	29044	7/19/2002	Grab	Columbia River	Above McNary Dam - Washington Shore	1		Uranium-234	1.240	pCi/g		0.8365	5000.0000	1.1000
ViewE	Hanford Environmental Oversight Program 2003 Data Summary Report	6/1/2005	30870	7/16/2003	Grab	Columbia River	Above McNary Dam - Oregon Shore	1		Uranium-234	1.430	pCi/g		0.8365	5000.0000	1.1000
ViewE	Hanford Environmental Oversight Program 2003 Data Summary Report	6/1/2005	30871	7/16/2003	Grab	Columbia River	Above McNary Dam - Washington Shore	1		Uranium-234	1.560	pCi/g		0.8365	5000.0000	1.1000
ViewE	Hanford Environmental Oversight Program 2003 Data Summary Report	6/1/2005	31810	8/8/2003	Grab	Columbia River	Above McNary Dam - Oregon Shore	1		Uranium-234	1.600	pCi/g		0.8365	5000.0000	1.1000
ViewE	Hanford Environmental Oversight Program 2003 Data Summary Report	6/1/2005	31811	8/8/2003	Grab	Columbia River	Above McNary Dam - 2/3 Oregon Shore	1		Uranium-234	1.500	pCi/g		0.8365	5000.0000	1.1000
ViewE	Hanford Environmental Oversight Program 2003 Data Summary Report	6/1/2005	31812	8/8/2003	Grab	Columbia River	Above McNary Dam - 2/3 Oregon Shore	1		Uranium-234	1.400	pCi/g		0.8365	5000.0000	1.1000
ViewE	Hanford Site Environmental Report for Calendar Year 1991	1/1/1992	E119891	1/18/1991	Grab	Columbia River	MCNARY-1/3 OR. SHORE	1		Uranium-234	1.260	pCi/g		0.8365	5000.0000	1.1000
ViewE	Hanford Site Environmental Report for Calendar Year 1991	1/1/1992	E119892	1/18/1991	Grab	Columbia River	MCNARY-2/3 OR. SHORE	1		Uranium-234	1.180	pCi/g		0.8365	5000.0000	1.1000
ViewE	Hanford Site Environmental Report for Calendar Year 1991	1/1/1992	E119902	12/13/1991	Grab	Columbia River	MCNARY-OREGON SHORE	1		Uranium-234	1.230	pCi/g		0.8365	5000.0000	1.1000
ViewE	Hanford Site Environmental Report for Calendar Year 1991	1/1/1992	E119903	12/13/1991	Grab	Columbia River	MCNARY-1/3 OR. SHORE	1		Uranium-234	1.230	pCi/g		0.8365	5000.0000	1.1000
ViewE	Hanford Site Environmental Report for Calendar Year 1991	1/1/1992	E119905	12/13/1991	Grab	Columbia River	McNary Dam - Washington Shore	1		Uranium-234	1.210	pCi/g		0.8365	5000.0000	1.1000
ViewE	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17BP2	8/8/2003	Grab	Columbia River	Above McNary Dam - Oregon Shore	1	Also reported in PNNL 14878, WDOE 04-05-016, ODOE NUC-007	Uranium-234	1.600	pCi/g		0.8365	5000.0000	1.1000
ViewE	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17BP3	8/8/2003	Grab	Columbia River	Above McNary Dam - 2/3 Oregon Shore	1	Also reported in PNNL 14878, WDOE 04-05-016, ODOE NUC-007	Uranium-234	1.500	pCi/g		0.8365	5000.0000	1.1000
ViewE	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17BP1	8/8/2003	Grab	Columbia River	McNary Dam - Oregon Shore Beach	1	Also reported in PNNL 14878, WDOE 04-05-016, ODOE NUC-007	Uranium-234	1.600	pCi/g		0.8365	5000.0000	1.1000

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewE	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1D0D5	8/9/2005		Columbia River	MCNARY-OR.SIDE NEAR DAM	1		Uranium-234	1.360	pCi/g		0.8365	5000.0000	1.1000
ViewE	1999 Hanford Environmental Oversight Program Data Summary Report	1/1/2000	23516	8/2/1999	Grab	Columbia River	Above McNary Dam - 1/3 Oregon Shore	1		Uranium-238	1.270	pCi/g		0.8316	2000.0000	1.1000
ViewE	Hanford Environmental Oversight Program 2000 Data Summary Report	1/1/2001	24743	8/8/2000	Grab	Columbia River	Above McNary Dam - Oregon Shore	1		Uranium-238	1.130	pCi/g		0.8316	2000.0000	1.1000
ViewE	Environmental Monitoring of Columbia River Sediments: Grain-Size Distribution and Contaminant Association	4/1/1995	B0BRS5	4/11/1994	Grab	Columbia River	Above McNary Dam - 1/3 Oregon Shore	1	coordinates estimated	Uranium-238	1.310	pCi/g		0.8316	2000.0000	1.1000
ViewE	Environmental Monitoring of Columbia River Sediments: Grain-Size Distribution and Contaminant Association	4/1/1995	B0BRS7	4/11/1994	Grab	Columbia River	Above McNary Dam - 2/3 Oregon Shore	1	coordinates estimated	Uranium-238	1.610	pCi/g		0.8316	2000.0000	1.1000
ViewE	Environmental Monitoring of Columbia River Sediments: Grain-Size Distribution and Contaminant Association	4/1/1995	B0BRS9	4/11/1994	Grab	Columbia River	Above McNary Dam - Washington Shore	1	coordinates estimated	Uranium-238	1.530	pCi/g		0.8316	2000.0000	1.1000
ViewE	Environmental Radiation Oversight Program - Database	1/1/2005	18467	8/16/1996	Grab	Columbia River	Above McNary Dam - 1/3 Oregon Shore	1		Uranium-238	1.200	pCi/g		0.8316	2000.0000	1.1000
ViewE	Environmental Radiation Oversight Program - Database	1/1/2005	18468	8/16/1996	Grab	Columbia River	Above McNary Dam - 2/3 Oregon Shore	1		Uranium-238	1.200	pCi/g		0.8316	2000.0000	1.1000
ViewE	Environmental Radiation Oversight Program - Database	1/1/2005	19680	8/15/1997	Grab	Columbia River	Above McNary Dam - 1/3 Oregon Shore	1		Uranium-238	1.250	pCi/g		0.8316	2000.0000	1.1000
ViewE	Environmental Radiation Oversight Program - Database	1/1/2005	19681	8/15/1997	Grab	Columbia River	Above McNary Dam - 2/3 Oregon Shore	1		Uranium-238	1.200	pCi/g		0.8316	2000.0000	1.1000
ViewE	Environmental Radiation Oversight Program - Database	1/1/2005	19682	8/15/1997	Grab	Columbia River	Above McNary Dam - Oregon Shore	1		Uranium-238	1.250	pCi/g		0.8316	2000.0000	1.1000
ViewE	Environmental Radiation Oversight Program - Database	1/1/2005	20751	8/11/1998	Grab	Columbia River	Above McNary Dam - 2/3 Oregon Shore	1		Uranium-238	1.220	pCi/g		0.8316	2000.0000	1.1000
ViewE	Environmental Radiation Oversight Program - Database	1/1/2005	33603	9/21/2004	Grab	Columbia River	Above McNary Dam - 2/3 Oregon Shore	1		Uranium-238	1.200	pCi/g		0.8316	2000.0000	1.1000
ViewE	Environmental Radiation Program 1992-1994 Annual Report	1/1/1999	12986	9/29/1992	Grab	Columbia River	Above McNary Dam - 1/3 Oregon Shore	1		Uranium-238	1.600	pCi/g		0.8316	2000.0000	1.1000
ViewE	Environmental Radiation Program 1992-1994 Annual Report	1/1/1999	12987	9/29/1992	Grab	Columbia River	Above McNary Dam - 2/3 Oregon Shore	1		Uranium-238	1.600	pCi/g		0.8316	2000.0000	1.1000

Table D-5. Radionuclide Data in Sediment Supporting Map Package #4 (19 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewE	Environmental Radiation Program 1992-1994 Annual Report	1/1/1999	12988	9/29/1992	Grab	Columbia River	Above McNary Dam - Washington Shore	1		Uranium-238	1.210	pCi/g		0.8316	2000.0000	1.1000
ViewE	Hanford Environmental Oversight Program 2002 Data Summary Report	1/1/2003	29043	7/19/2002	Grab	Columbia River	Above McNary Dam - Oregon Shore	1		Uranium-238	1.120	pCi/g		0.8316	2000.0000	1.1000
ViewE	Hanford Environmental Oversight Program 2002 Data Summary Report	1/1/2003	29044	7/19/2002	Grab	Columbia River	Above McNary Dam - Washington Shore	1		Uranium-238	1.110	pCi/g		0.8316	2000.0000	1.1000
ViewE	Hanford Environmental Oversight Program 2003 Data Summary Report	6/1/2005	30870	7/16/2003	Grab	Columbia River	Above McNary Dam - Oregon Shore	1		Uranium-238	1.330	pCi/g		0.8316	2000.0000	1.1000
ViewE	Hanford Environmental Oversight Program 2003 Data Summary Report	6/1/2005	30871	7/16/2003	Grab	Columbia River	Above McNary Dam - Washington Shore	1		Uranium-238	1.240	pCi/g		0.8316	2000.0000	1.1000
ViewE	Hanford Environmental Oversight Program 2003 Data Summary Report	6/1/2005	31810	8/8/2003	Grab	Columbia River	Above McNary Dam - Oregon Shore	1		Uranium-238	1.300	pCi/g		0.8316	2000.0000	1.1000
ViewE	Hanford Environmental Oversight Program 2003 Data Summary Report	6/1/2005	31811	8/8/2003	Grab	Columbia River	Above McNary Dam - 2/3 Oregon Shore	1		Uranium-238	1.400	pCi/g		0.8316	2000.0000	1.1000
ViewE	Hanford Environmental Oversight Program 2003 Data Summary Report	6/1/2005	31812	8/8/2003	Grab	Columbia River	Above McNary Dam - 2/3 Oregon Shore	1		Uranium-238	1.400	pCi/g		0.8316	2000.0000	1.1000
ViewE	Hanford Site Environmental Report for Calendar Year 1991	1/1/1992	E119892	1/18/1991	Grab	Columbia River	MCNARY-2/3 OR. SHORE	1		Uranium-238	1.150	pCi/g		0.8316	2000.0000	1.1000
ViewE	Hanford Site Environmental Report for Calendar Year 1991	1/1/1992	E119903	12/13/1991	Grab	Columbia River	MCNARY-1/3 OR. SHORE	1		Uranium-238	1.110	pCi/g		0.8316	2000.0000	1.1000
ViewE	Hanford Site Environmental Report for Calendar Year 1992	1/1/1993	E033016	9/29/1992	Grab	Columbia River	MCNARY-OREGON SHORE	1		Uranium-238	1.240	pCi/g		0.8316	2000.0000	1.1000
ViewE	Hanford Site Environmental Report for Calendar Year 1992	1/1/1993	E033017	9/29/1992	Grab	Columbia River	MCNARY-1/3 OR. SHORE	1		Uranium-238	1.300	pCi/g		0.8316	2000.0000	1.1000
ViewE	Hanford Site Environmental Report for Calendar Year 1992	1/1/1993	E033018	9/29/1992	Grab	Columbia River	MCNARY-2/3 OR. SHORE	1		Uranium-238	1.390	pCi/g		0.8316	2000.0000	1.1000
ViewE	Hanford Site Environmental Report for Calendar Year 1993	1/1/1994	E124478	8/20/1993	Grab	Columbia River	MCNARY-1/3 OR. SHORE	1		Uranium-238	1.130	pCi/g		0.8316	2000.0000	1.1000
ViewE	Hanford Site Environmental Report for Calendar Year 1993	1/1/1994	E124480	8/20/1993	Grab	Columbia River	MCNARY-2/3 OR. SHORE	1		Uranium-238	1.410	pCi/g		0.8316	2000.0000	1.1000
ViewE	Hanford Site Environmental Report for Calendar Year 1994	1/1/1995	B0CDK3	9/23/1994	Grab	Columbia River	MCNARY-OREGON SHORE	1		Uranium-238	1.210	pCi/g		0.8316	2000.0000	1.1000

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewE	Hanford Site Environmental Report for Calendar Year 1994	1/1/1995	B0CDK5	9/23/1994	Grab	Columbia River	MCNARY-1/3 OR. SHORE	1		Uranium-238	1.680	pCi/g		0.8316	2000.0000	1.1000
ViewE	Hanford Site Environmental Report for Calendar Year 1994	1/1/1995	B0CDK7	9/23/1994	Grab	Columbia River	MCNARY-2/3 OR. SHORE	1		Uranium-238	1.980	pCi/g		0.8316	2000.0000	1.1000
ViewE	Hanford Site Environmental Report for Calendar Year 1995	1/1/1996	B0G8T3	7/28/1995	Grab	Columbia River	MCNARY-OREGON SHORE	1		Uranium-238	2.250	pCi/g		0.8316	2000.0000	1.1000
ViewE	Hanford Site Environmental Report for Calendar Year 1995	1/1/1996	B0G8T5	7/28/1995	Grab	Columbia River	MCNARY-1/3 OR. SHORE	1		Uranium-238	2.330	pCi/g		0.8316	2000.0000	1.1000
ViewE	Hanford Site Environmental Report for Calendar Year 1995	1/1/1996	B0G8T7	7/28/1995	Grab	Columbia River	MCNARY-2/3 OR. SHORE	1		Uranium-238	1.500	pCi/g		0.8316	2000.0000	1.1000
ViewE	Hanford Site Environmental Report for Calendar Year 1995	1/1/1996	B0G8T9	7/28/1995	Grab	Columbia River	McNary Dam - Washington Shore	1		Uranium-238	1.710	pCi/g		0.8316	2000.0000	1.1000
ViewE	Hanford Site Environmental Report for Calendar Year 1996	1/1/1997	B0J5D6	8/16/1996	Grab	Columbia River	MCNARY-OREGON SHORE	1		Uranium-238	2.320	pCi/g		0.8316	2000.0000	1.1000
ViewE	Hanford Site Environmental Report for Calendar Year 1996	1/1/1997	B0J5F0	8/16/1996	Grab	Columbia River	MCNARY-2/3 OR. SHORE	1		Uranium-238	1.890	pCi/g		0.8316	2000.0000	1.1000
ViewE	Hanford Site Environmental Report for Calendar Year 1996	1/1/1997	B0J5F2	8/16/1996	Grab	Columbia River	McNary Dam - Washington Shore	1		Uranium-238	1.350	pCi/g		0.8316	2000.0000	1.1000
ViewE	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17BP2	8/8/2003	Grab	Columbia River	Above McNary Dam - Oregon Shore	1	Also reported in PNNL 14878, WDOE 04-05-016, ODOE NUC-007	Uranium-238	1.300	pCi/g		0.8316	2000.0000	1.1000
ViewE	Survey of Potential Hanford Site Contaminants in the Upper Sediment for the Reservoirs at McNary, John Day, The Dalles, and Bonneville Dams, 2003	2/1/2005	B17BP3	8/8/2003	Grab	Columbia River	Above McNary Dam - 2/3 Oregon Shore	1	Also reported in PNNL 14878, WDOE 04-05-016, ODOE NUC-007	Uranium-238	1.400	pCi/g		0.8316	2000.0000	1.1000

Refer to Columbia River Component Data Evaluation Summary Report July 2006 WCH-91 for Category definitions.

Refer to Table D-6 for Lab Qualifier definitions.

[a] Unassigned - Specific location coordinates are not available for this sample and therefore are not represented on the maps, however these results are included in the database and the summary tables.

Table D-6. Radionuclide Data in Surface Water Supporting Map Package #5 (6 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1CCX9	3/18/2005			NS-3 SEEP	1	NS-3 SEEP	Strontium-90	178.00	pCi/L		0.0745	300.0000	8.0000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1CCY2	3/18/2005			NS-4 SEEP	1	NS-4 SEEP	Strontium-90	91.40	pCi/L		0.0745	300.0000	8.0000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1D3P1	6/10/2005			NS-4 SEEP	1	NS-4 SEEP	Strontium-90	95.30	pCi/L		0.0745	300.0000	8.0000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DTT9	11/1/2005			NS-4 SEEP	1	NS-4-SEEP	Strontium-90	25.20	pCi/L		0.0745	300.0000	8.0000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DWT5	10/6/2005	UNFILTERED, RAW GRAB		300 AREA SPRING 42-7	1	APPROXIMATELY 80 YARDS ABOVE 331 OUTFALL.	Uranium-234	24.60	pCi/L		0.2243	200.0000	20.0000
Unassigned[a]	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DWT5	10/6/2005	UNFILTERED, RAW GRAB		300 AREA SPRING 42-7	1	APPROXIMATELY 80 YARDS ABOVE 331 OUTFALL.	Uranium-238	24.30	pCi/L		0.1786	200.0000	20.0000
ViewB1	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0VW80	6/22/1999	Discrete	Columbia River	100BC Area	1	coordinates estimated	Tritium	20200.00	pCi/L		28.9424	300000000.0000	20000.0000
ViewB2	1999 Hanford Environmental Oversight Program Data Summary Report	1/1/2000	23736	10/25/1999	Discrete	Columbia River	100N SPR STA 3	1		Strontium-90	33.00	pCi/L		0.0745	300.0000	8.0000
ViewB2	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0VWR2	6/28/1999	Discrete	Columbia River	100N Area	1	coordinates estimated	Strontium-90	109.00	pCi/L		0.0745	300.0000	8.0000
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13601	10/25/2001		Columbia River	100-K SPRING 77-1	1	SK-077-1, Seep	Uranium-238	1000.00	pCi/L	U	0.1786	200.0000	20.0000
ViewB2	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B13605	10/25/2001		Columbia River	100-K SPRING 82-2	1	SK-082-2, Seep	Uranium-238	1900.00	pCi/L	U	0.1786	200.0000	20.0000
ViewB3	1999 Hanford Environmental Oversight Program Data Summary Report	1/1/2000	23440	10/27/1999	Discrete	Columbia River	100H SPRING 153-1	1	Seep	Strontium-90	10.90	pCi/L		0.0745	300.0000	8.0000
ViewB3	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP19	10/27/1999	Discrete	Columbia River	100H SPRING 153-1	1	Seep	Strontium-90	13.70	pCi/L		0.0745	300.0000	8.0000
ViewB3	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W86	4/30/2001	Discrete	Columbia River	100H SPRING 153-1	1	Seep	Strontium-90	14.20	pCi/L		0.0745	300.0000	8.0000
ViewB3	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17RL8	10/27/2003	Discrete	Columbia River	100H SPRING 153-1	1	Seep	Strontium-90	13.60	pCi/L		0.0745	300.0000	8.0000
ViewC	1999 Hanford Environmental Oversight Program Data Summary Report	1/1/2000	23439	11/1/1999	Discrete	Columbia River	SPRING 28.2	1	estimated, Seep	Tritium	63600.00	pCi/L		28.9424	300000000.0000	20000.0000

Table D-6. Radionuclide Data in Surface Water Supporting Map Package #5 (6 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewC	Environmental Radiation Oversight Program - Database	1/1/2005	33185	10/25/2004	Discrete	Columbia River	SPR DR 28.2	1	Seep	Tritium	50600.00	pCi/L		28.9424	300000000.0000	20000.0000
ViewC	Hanford Environmental Oversight Program 2000 Data Summary Report	1/1/2001	24573	9/27/2000	Discrete	Columbia River	SPRING 28.2	1	estimated, Seep	Tritium	70700.00	pCi/L		28.9424	300000000.0000	20000.0000
ViewC	Hanford Environmental Oversight Program 2001 Data Summary Report	1/1/2002	26955	5/4/2001	Discrete	Columbia River	SPRING 28.2	1	estimated, Seep	Tritium	112000.00	pCi/L		28.9424	300000000.0000	20000.0000
ViewC	Hanford Environmental Oversight Program 2002 Data Summary Report	1/1/2003	29079	10/7/2002	Discrete	Columbia River	SPRING 28.2	1	estimated, Seep	Tritium	71600.00	pCi/L		28.9424	300000000.0000	20000.0000
ViewC	Hanford Environmental Oversight Program 2002 Data Summary Report	1/1/2003	29094	9/9/2002	Discrete	Columbia River	Hanfrd Twnsite HRM 28	1		Tritium	21000.00	pCi/L		28.9424	300000000.0000	20000.0000
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WNY1	11/1/1999	Discrete	Columbia River	HANFORD SPRING 28-2	1	coordinates estimated, Seep	Tritium	106000.00	pCi/L		28.9424	300000000.0000	20000.0000
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP25	11/1/1999	Discrete	Columbia River	HANFORD SPR UR 28-2	1	Seep	Tritium	75000.00	pCi/L		28.9424	300000000.0000	20000.0000
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP26	11/1/1999	Discrete	Columbia River	HANFORD SPR DR 28-2	1	Seep	Tritium	86100.00	pCi/L		28.9424	300000000.0000	20000.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10912	9/27/2000	Discrete	Columbia River	HANFORD SPRING 28-2	1	coordinates estimated, Seep	Tritium	61100.00	pCi/L		28.9424	300000000.0000	20000.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10945	9/27/2000	Discrete	Columbia River	HANFORD SPR UR 28-2	1	Seep	Tritium	53900.00	pCi/L		28.9424	300000000.0000	20000.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10946	9/27/2000	Discrete	Columbia River	HANFORD SPR DR 28-2	1	Seep	Tritium	79100.00	pCi/L		28.9424	300000000.0000	20000.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W36	4/30/2001	Discrete	Columbia River	HANFORD SPRING 28-2	1	coordinates estimated, Seep	Tritium	102000.00	pCi/L		28.9424	300000000.0000	20000.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W55	4/30/2001	Discrete	Columbia River	HANFORD SPR DR 28-2	1	Seep	Tritium	107000.00	pCi/L		28.9424	300000000.0000	20000.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C09	10/7/2002	Discrete	Columbia River	HANFORD SPRING 28-2	1	coordinates estimated, Seep	Tritium	58400.00	pCi/L		28.9424	300000000.0000	20000.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C73	10/7/2002	Discrete	Columbia River	HANFORD SPR DR 28-2	1	Seep	Tritium	53900.00	pCi/L		28.9424	300000000.0000	20000.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFP3	10/25/2004	UNFILTERED, RAW GRAB	Columbia River	HANFORD SPRING 28-2	1		Tritium	66700.00	pCi/L		28.9424	300000000.0000	20000.0000

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFV5	10/25/2004	UNFILTERED, RAW GRAB	Columbia River	HANFORD SPR DR 28-2	1		Tritium	45800.00	pCi/L		28.9424	300000000.0000	20000.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F5F6	10/18/2005	UNFILTERED, RAW GRAB	Columbia River	HANFORD SPRING 28-2	1		Tritium	38600.00	pCi/L		28.9424	300000000.0000	20000.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1F5K6	10/18/2005	UNFILTERED, RAW GRAB	Columbia River	HANFORD SPR DR 28-2	1		Tritium	24200.00	pCi/L		28.9424	300000000.0000	20000.0000
ViewC	Environmental Radiation Oversight Program - Database	1/1/2005	33144	10/25/2004	Discrete	Columbia River	300 SPR MILE 42.2	1	Seep	Uranium-234	23.30	pCi/L		0.2243	200.0000	20.0000
ViewC	Hanford Environmental Oversight Program 2000 Data Summary Report	1/1/2001	24574	9/27/2000	Discrete	Columbia River	300 SPR MILE 42.2	1	Seep	Uranium-234	22.00	pCi/L		0.2243	200.0000	20.0000
ViewC	Hanford Environmental Oversight Program 2001 Data Summary Report	1/1/2002	26956	5/10/2001	Discrete	Columbia River	300 SPR MILE 42.2	1	Seep	Uranium-234	26.80	pCi/L		0.2243	200.0000	20.0000
ViewC	Hanford Environmental Oversight Program 2001 Data Summary Report	1/1/2002	26957	5/3/2001	Discrete	Columbia River	300 SPR DR 42-2	1	coordinates estimated, Seep	Uranium-234	41.30	pCi/L		0.2243	200.0000	20.0000
ViewC	Hanford Environmental Oversight Program 2001 Data Summary Report	1/1/2002	27671	8/27/2001	Discrete	Columbia River	300 SPR DR 42-2	1	coordinates estimated, Seep	Uranium-234	43.50	pCi/L		0.2243	200.0000	20.0000
ViewC	Hanford Environmental Oversight Program 2001 Data Summary Report	1/1/2002	27672	8/27/2001	Discrete	Columbia River	300 SPR 9-1	1	coordinates estimated	Uranium-234	29.10	pCi/L		0.2243	200.0000	20.0000
ViewC	Hanford Environmental Oversight Program 2003 Data Summary Report	6/1/2005	30857	10/13/2003	Discrete	Columbia River	300 SPR MILE 42.2	1	Seep	Uranium-234	41.40	pCi/L		0.2243	200.0000	20.0000
ViewC	Hanford Environmental Oversight Program 2003 Data Summary Report	6/1/2005	30940	10/13/2003	Discrete	Columbia River	300 SPR DR 42-2	1	coordinates estimated, Seep	Uranium-234	50.70	pCi/L		0.2243	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WNY3	11/1/1999	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	Uranium-234	41.60	pCi/L		0.2243	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP28	11/1/1999	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	Uranium-234	111.00	pCi/L		0.2243	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10913	9/27/2000	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	Uranium-234	25.80	pCi/L		0.2243	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10949	9/27/2000	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	Uranium-234	68.90	pCi/L		0.2243	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W38	5/10/2001	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	Uranium-234	26.50	pCi/L		0.2243	200.0000	20.0000

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View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W57	5/3/2001	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	Uranium-234	37.90	pCi/L		0.2243	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RM6	8/27/2001	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	Uranium-234	53.30	pCi/L		0.2243	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12XK2	9/17/2001	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	Uranium-234	36.30	pCi/L		0.2243	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C75	12/26/2002	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	Uranium-234	50.80	pCi/L		0.2243	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17RJ2	10/13/2003	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	Uranium-234	69.80	pCi/L		0.2243	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17RK1	10/13/2003	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	Uranium-234	57.20	pCi/L		0.2243	200.0000	20.0000
ViewC	Survey of Radiological and Chemical Contaminants in the Near-Shore Environment at the Hanford Site 300 Area	9/1/2003	B12RT9	8/27/2001	Discrete	Columbia River	300 SPR 9-1	1		Uranium-234	30.50	pCi/L		0.2243	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFP4	10/25/2004	UNFILTERED, RAW GRAB	Columbia River	300 AREA SPRING 42-2	1		Uranium-234	24.30	pCi/L		0.2243	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DWR1	10/6/2005	UNFILTERED, RAW GRAB	Columbia River	300 AREA SPRING 42-2	1		Uranium-234	25.90	pCi/L		0.2243	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DWR5	10/6/2005	UNFILTERED, RAW GRAB	Columbia River	300 AREA SPR DR 42-2	1		Uranium-234	52.10	pCi/L		0.2243	200.0000	20.0000
ViewC	Columbia Generating Station 2002 Annual Radiological Environmental Operating Report	1/1/2003	L19598-6	10/1/2002	Discrete	Columbia River	CGS (WNP-2) STA 29, WTP	1	Map provided for locations. Samples from Drinking Water.	Uranium-238	210.10	pCi/L	U	0.1786	200.0000	20.0000
ViewC	Columbia Generating Station 2002 Annual Radiological Environmental Operating Report	1/1/2003	L19879-4	11/5/2002	Discrete	Columbia River	CGS (WNP-2) STA 26, INTAKE	1	Map provided for locations.	Uranium-238	679.00	pCi/L	U	0.1786	200.0000	20.0000
ViewC	Columbia Generating Station 2002 Annual Radiological Environmental Operating Report	1/1/2003	L19879-6	11/5/2002	Discrete	Columbia River	CGS (WNP-2) STA 29, WTP	1	Map provided for locations. Samples from Drinking Water.	Uranium-238	243.00	pCi/L	U	0.1786	200.0000	20.0000
ViewC	Environmental Radiation Oversight Program - Database	1/1/2005	33144	10/25/2004	Discrete	Columbia River	300 SPR MILE 42.2	1	Seep	Uranium-238	22.90	pCi/L		0.1786	200.0000	20.0000
ViewC	Hanford Environmental Oversight Program 2000 Data Summary Report	1/1/2001	24574	9/27/2000	Discrete	Columbia River	300 SPR MILE 42.2	1	Seep	Uranium-238	21.00	pCi/L		0.1786	200.0000	20.0000

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ViewC	Hanford Environmental Oversight Program 2001 Data Summary Report	1/1/2002	26956	5/10/2001	Discrete	Columbia River	300 SPR MILE 42.2	1	Seep	Uranium-238	24.50	pCi/L		0.1786	200.0000	20.0000
ViewC	Hanford Environmental Oversight Program 2001 Data Summary Report	1/1/2002	26957	5/3/2001	Discrete	Columbia River	300 SPR DR 42-2	1	coordinates estimated, Seep	Uranium-238	37.30	pCi/L		0.1786	200.0000	20.0000
ViewC	Hanford Environmental Oversight Program 2001 Data Summary Report	1/1/2002	27671	8/27/2001	Discrete	Columbia River	300 SPR DR 42-2	1	coordinates estimated, Seep	Uranium-238	44.00	pCi/L		0.1786	200.0000	20.0000
ViewC	Hanford Environmental Oversight Program 2001 Data Summary Report	1/1/2002	27672	8/27/2001	Discrete	Columbia River	300 SPR 9-1	1	coordinates estimated	Uranium-238	28.40	pCi/L		0.1786	200.0000	20.0000
ViewC	Hanford Environmental Oversight Program 2003 Data Summary Report	6/1/2005	30857	10/13/2003	Discrete	Columbia River	300 SPR MILE 42.2	1	Seep	Uranium-238	40.20	pCi/L		0.1786	200.0000	20.0000
ViewC	Hanford Environmental Oversight Program 2003 Data Summary Report	6/1/2005	30940	10/13/2003	Discrete	Columbia River	300 SPR DR 42-2	1	coordinates estimated, Seep	Uranium-238	45.50	pCi/L		0.1786	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WNY3	11/1/1999	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	Uranium-238	37.60	pCi/L		0.1786	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 1999	1/1/2000	B0WP28	11/1/1999	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	Uranium-238	99.30	pCi/L		0.1786	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10913	9/27/2000	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	Uranium-238	23.60	pCi/L		0.1786	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2000	1/1/2001	B10949	9/27/2000	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	Uranium-238	61.00	pCi/L		0.1786	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W38	5/10/2001	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	Uranium-238	25.30	pCi/L		0.1786	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B11W57	5/3/2001	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	Uranium-238	34.20	pCi/L		0.1786	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12RM6	8/27/2001	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	Uranium-238	47.50	pCi/L		0.1786	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2001	1/1/2002	B12XK2	9/17/2001	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	Uranium-238	33.80	pCi/L		0.1786	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2002	1/1/2003	B15C75	12/26/2002	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	Uranium-238	46.60	pCi/L		0.1786	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17RJ2	10/13/2003	Discrete	Columbia River	300 AREA SPRING 42-2	1	coordinates estimated, Seep	Uranium-238	65.90	pCi/L		0.1786	200.0000	20.0000

Table D-6. Radionuclide Data in Surface Water Supporting Map Package #5 (6 Pages)

View	Source Title	Pub Date	Sample Number	Sample Date	Sample Type	Sample Area	Sample Site	Category	Comments	Compound	Result	Units	Lab Qual	Background Average	Eco Benchmark	HH Benchmark
ViewC	Hanford Site Environmental Report for Calendar Year 2003	1/1/2004	B17RK1	10/13/2003	Discrete	Columbia River	300 AREA SPR DR 42-2	1	coordinates estimated, Seep	Uranium-238	52.30	pCi/L		0.1786	200.0000	20.0000
ViewC	Survey of Radiological and Chemical Contaminants in the Near-Shore Environment at the Hanford Site 300 Area	9/1/2003	B12RT9	8/27/2001	Discrete	Columbia River	300 SPR 9-1	1		Uranium-238	27.80	pCi/L		0.1786	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2004	1/1/2005	B1BFP4	10/25/2004	UNFILTERED, RAW GRAB	Columbia River	300 AREA SPRING 42-2	1		Uranium-238	22.80	pCi/L		0.1786	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DWR1	10/6/2005	UNFILTERED, RAW GRAB	Columbia River	300 AREA SPRING 42-2	1		Uranium-238	24.70	pCi/L		0.1786	200.0000	20.0000
ViewC	Hanford Site Environmental Report for Calendar Year 2005	1/1/2006	B1DWR5	10/6/2005	UNFILTERED, RAW GRAB	Columbia River	300 AREA SPR DR 42-2	1		Uranium-238	48.30	pCi/L		0.1786	200.0000	20.0000

Refer to Columbia River Component Data Evaluation Summary Report July 2006 WCH-91 for Category definitions.

Refer to Table D-6 for Lab Qualifier definitions.

[a] Unassigned - Specific location coordinates are not available for this sample and therefore are not represented on the maps, however these results are included in the database and the summary tables.

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Figure 4-1: Sediment and Surface Water Sampling Locations

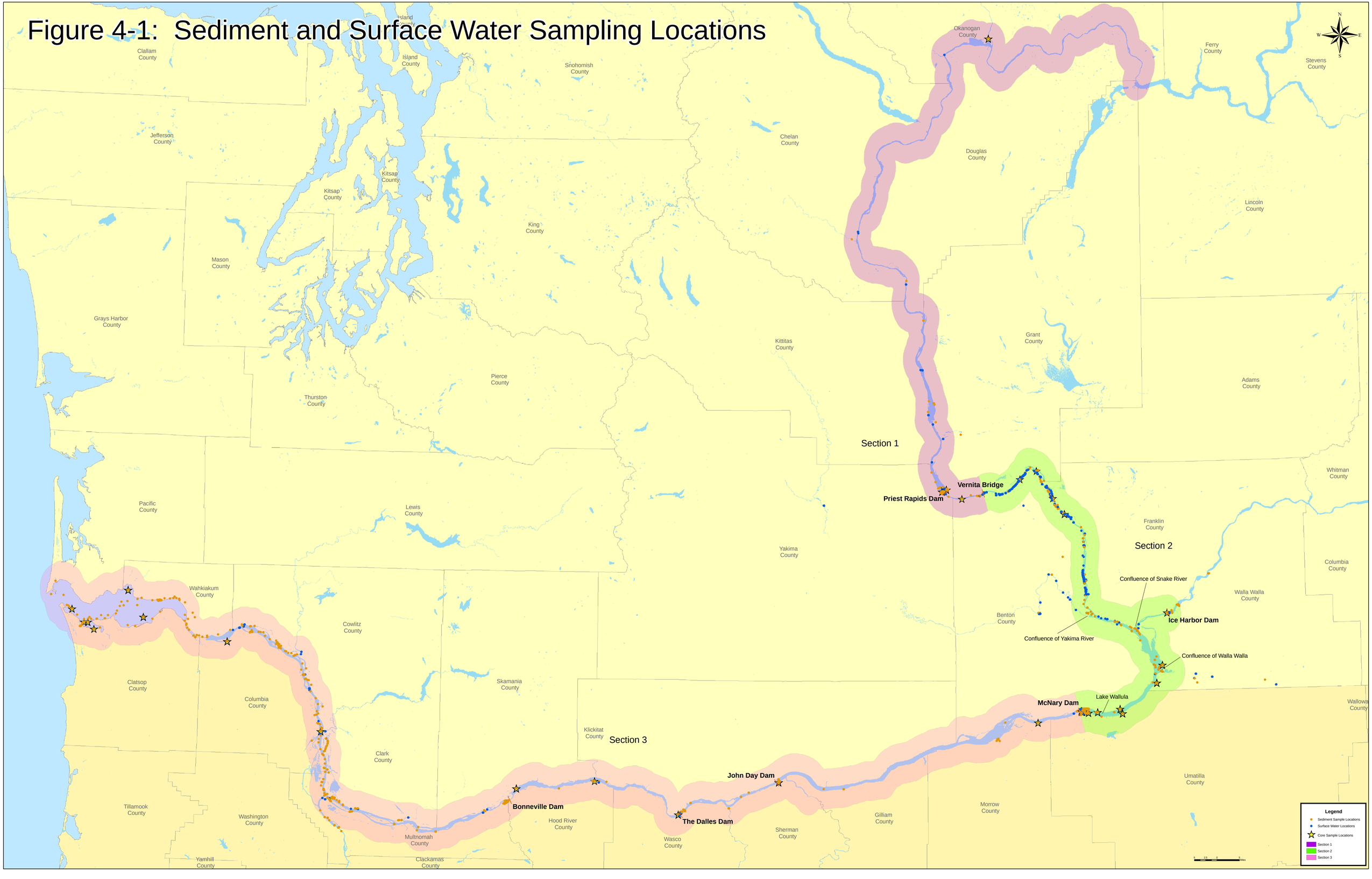

Figure 4-7: Sediment Core Sampling Locations Study Area

N
W E
S

Clallam County
Island County
Island County
Snohomish County
Okanogan County
Ferry County
Jefferson County
Chelan County
Douglas County
Kitsap County
Kitsap County
King County
Lincoln County
Mason County
Grays Harbor County
Kittitas County
Grant County
Pierce County
Thurston County
Adams County
Pacific County
Lewis County
Priest Rapids Dam
Vernita Bridge
Wahkiakum County
Yakima County
Franklin County
Cowlitz County
Benton County
Walla Walla County
Ice Harbor Dam
Clatsop County
Columbia County
Skamania County
Klickitat County
Clark County
McNary Dam
Bonneville Dam
John Day Dam
The Dalles Dam
Tillamook County
Washington County
Multnomah County
Hood River County
Wasco County
Sherman County
Gilliam County
Morrow County
Umatilla County
Yamhill County
Clackamas County
Marion County

5 2.5 0 5 Miles

Legend

- Core Sample Locations
- Reactor/Operational Areas
- Townsite Area

Figure 5-1: Sediment Sample Locations
Primary Study Area

N
W
E
S

Kittitas
Grant
Adams
Yakima
Benton
Klickitat
Franklin
Walla Walla
Morrow
Umatilla

Vernita Bridge
Priest Rapids Dam
Ice Harbor Dam
McNary Dam

100-B/C
100-K
100-N
100-D
100-H
100-F
White Bluffs Townsite
Hanford Townsite
200 West
200 East
400 Area
300 Area
1100 Area

HR-location 2
HR-location 3
HR-location 4
PEW-1sed
SRP 3.4
SRP 7A
MCN 22

5 2.5 0 5 Miles

Legend

- Sediment Sample Location
- Core Sample Locations (label highlighted in yellow)
- Reactor/Operational Areas
- Townsite Area

Figure 5-2: Surface Water Sample Locations Primary Study Area

Kittitas County

Grant County

Adams County

Yakima County

Benton County

Franklin County

Klickitat County

Walla Walla County

Morrow County

Umatilla County

Priest Rapids Dam

Vernita Bridge

100-B/C

100-K

100-N

100-D

100-H

White Bluffs Townsite

100-F

Hanford Townsite

200 West

200 East

400 Area

300 Area

See List A

1100 Area

McNary Dam

Ice Harbor Dam

Yakima River

Snake River

Columbia River

Effluent

Kennewick

Pasco

Pasco-fil-1
Pasco-fil-10
Pasco-fil-11
Pasco-fil-12
Pasco-fil-13
Pasco-fil-14
Pasco-fil-15
Pasco-fil-16
Pasco-fil-17
Pasco-fil-18
Pasco-fil-2
Pasco-fil-3
Pasco-fil-4
Pasco-fil-5
Pasco-fil-6
Pasco-fil-7
Pasco-fil-8
Pasco-fil-9

Ice Harbor Damb
Ice Harbor Damc
Ice Harbor Damd
Ice Harbor Dame
Ice Harbor Damf

McNary-WA Shore
McNary-2/3 OR Shore
McNary Dam
McNary Damb
McNary Damc
McNary Damd
McNary Dame
McNary Damf
McNary OR Shore

List A

17182	805-RP8	B0C2S3	B10781	B12VP8	B18TC9
18666	805-RP9	B0C2S4	B10783	B12VP9	B18TD0
20337	805-WC1	B0C2S5	B10784	B12VR0	B18TH3
24574	805-WC10	B0C2S6	B10BY4	B12VR1	B18TH5
26956	805-WC2	B0C2S7	B10BY5	B12VR2	B18TH6
26957	805-WC3	B0C2S8	B10903	B12VR3	B18TH7
27408	805-WC5	B0C2S9	B10907	B12VR4	B18TH8
27409	805-WC6	B0C2T0	B10913	B12VR5	B18TH9
27410	805-WC7	B0C2T1	B10949	B12VX2	B18TJ0
27650	805-WC8	B0C2T2	B10973	B13LJ9	B18FN1
27662	805-WC9	B0C2T3	B10974	B13LK0	B18FP4
27663	827-RP1	B0C2T4	B10975	B13LK3	B18FV8
27664	827-RP2	B0C2T5	B109J6	B13LK4	B18FY3
27665	827-RP3	B0C2T6	B109C7	B14RY0	B18FY4
27666	827-RP4	B0C2T7	B109C8	B14RY1	B18FY5
27667	827-RP5	B0C2T8	B109C9	B14RY4	B18FY6
27668	827-RP6	B0C2T9	B109D0	B14RY5	B18FY7
27669	827-RP7	B0C2V0	B109D1	B158B9	B18J63
27670	827-RP8	B0C2V1	B11151	B158C0	B18JB4
27671	827-RP9	B0C2V2	B11152	B158C1	B18WS4
27672	827-RP9	B0C2V3	B11155	B158C9	B18XA50
27673	831-RP1	B0C2V4	B11156	B158D0	B1CRM9
27674	831-RP2	B0C2V5	B11H65	B158D1	B1CL.C9
27675	831-RP3	B0C2V7	B11H66	B158L5	B1D2P8
27676	831-RP4	B0C2V8	B11H69	B158L6	B1D7K7
27677	831-RP5	B0C2W0	B11H70	B158L7	B1DM25
27678	831-RP6	B0C2W1	B11W31	B158L8	B1DM27
27679	831-RP7	B0VWV9	B11W34	B158L9	B1DM28
27680	831-RP8	B0W823	B11W38	B158M0	B1DM29
27693	831-RP9	B0W824	B11W57	B158R8	B1DM31
27694	910-RP1	B0W825	B11W62	B158R9	B1DM32
27695	910-RP2	B0W826	B11W83	B158T0	B1DM53
27696	910-RP3	B0W827	B11W84	B158T1	B1DM55
27697	910-RP4	B0W828	B11W85	B158T2	B1DM56
27698	910-RP5	B0W853	B12537	B158T3	B1DM57
27699	910-RP6	B0W854	B12538	B158W2	B1DM58
27700	910-RP7	B0W855	B12541	B158W3	B1DM59
30857	910-RP8	B0W862	B12542	B158W5	B1DMP2
30911	929-EC1	B0W863	B12RL1	B158W7	B1DMP3
30912	929-EC10	B0W864	B12RL2	B158Y0	B1DMP4
30913	929-EC2	B0W883	B12RL6	B158Y3	B1DMP5
30940	929-EC3	B0W884	B12RL8	B158Y4	B1DWR7
33071	929-EC4	B0W885	B12RM1	B158Y5	B1DWR1
33144	929-EC5	B0W886	B12RM6	B158Y6	B1DWR5
33197	929-EC6	B0W887	B12RM8	B158Y7	B1DWR7
33198	929-EC7	B0W888	B12RM9	B158Y8	B1DWR8
33199	929-EC8	B0WBC5	B12RN0	B15S900	B1DWR9
33200	929-EC9	B0WBC6	B12RN1	B15S901	B1DWT4
33225	929-RP1	B0WBP1	B12RN5	B159C4	B1DWT9
623-EC1	929-RP10	B0WBP2	B12RN6	B159C5	B1DWV0
623-EC10	929-RP11	B0WBP3	B12RN6	B159C6	B1DWY6
623-EC2	929-RP12	B0WBP4	B12RN6	B159C7	B1DWY7
623-EC3	929-RP13	B0WC84	B12RP1	B159C8	B1DWY8
623-EC4	929-RP14	B0WC85	B12RP2	B159C9	B1F7Y6
623-EC5	929-RP15	B0WC86	B12RP5	B159D0	B1F7Y7
623-EC6	929-RP16	B0WC87	B12RR0	B159D1	B1F7Y8
623-EC7	929-RP17	B0WC88	B12RR5	B159D2	B1F7Y9
623-EC8	929-RP18	B0WKP1	B12RR7	B15C01	B1FR00
623-EC9	929-RP19	B0WMV3	B12RR9	B15C06	B1FB01
623-RP1	929-RP2	B0WNV4	B12RT1	B15C11	B1FB02
623-RP10	929-RP20	B0WNX5	B12RT3	B15C75	B1FB03
623-RP11	929-RP3	B0WNX8	B12RT5	B15C99	B1FV54
623-RP12	929-RP4	B0WNY3	B12RT7	B15CB2	B1H154
623-RP13	929-RP5	B0WP28	B12RT9	B15CD5	E002642
623-RP14	929-RP6	B0WP33	B12RV1	B16368	J11127
623-RP15	929-RP7	B0WP55	B12RV3	B16369	J11128
623-RP16	929-RP8	B0WP56	B12RV5	B16372	J11129
623-RP17	929-RP9	B0WPS7	B12RV7	B16373	J11136
623-RP18	929-WC1	B0X408	B12RV9	B17CJ0	J11137
623-RP19	929-WC10	B0X409	B12RW1	B17CJ2	J11138
623-RP2	929-WC2	B0X412	B12RW5	B17CJ4	J11193
623-RP20	929-WC3	B0X413	B12RW7	B17CJ6	J11194
623-RP3	929-WC4	B0XRP4	B12RW9	B17CJ8	J11195
623-RP4	929-WC5	B0XRP5	B12RX1	B17CK0	J11196
623-RP5	929-WC6	B0XRP8	B12RX3	B17CN9	J1118A
623-RP6	929-WC7	B0XRP9	B12RX5	B17CP0	J1118B
623-RP7	929-WC8	B0YCX9	B12T09	B17CP1	J1118J
623-RP8	929-WC9	B0YCL0	B12T10	B17CP2	J1111O
623-RP9	B01319	B0YCL3	B12T13	B17CP3	J1118Z
623-WC1	B01322	B0YCL4	B12T15	B17CP4	J1118N3
623-WC10	B01372	B106K8	B12T17	B17CW5	J1118N4
623-WC2	B01373	B106K9	B12T19	B17CW8	J1118N5
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623-WC4	B01375	B106L1	B12T23	B17CX2	J1118P5
623-WC5	B01376	B106L2	B12T51	B17CX3	J1118P7
623-WC6	B01377	B106L3	B12T52	B17CX6	J1118P8
623-WC7	B01385	B106L4	B12T53	B17HW8	
623-WC8	B076G8	B106L5	B12T61	B17HJ0	
623-WC9	B076G9	B106L6	B12T62	B17HJ1	
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805-EC2	B076J1	B106R7	B12T66	B17HJ3	
805-EC3	B076J3	B106R8	B12T68	B17HJ4	
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805-EC6	B076J8	B106T8	B12TC4	B17HJ7	
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805-EC8	B076P8	B106X5	B12TK2	B17RJ0	
805-EC9	B076R2	B106X7	B12TK3	B17RJ2	
805-EP1	B076V0	B106X9	B12TK4	B17RK1	
805-RP10	B076V1	B106Y1	B12TK5	B17RL4	
805-RP11	B076V2	B106Y3	B12TK6	B17RL5	
805-RP12	B076V3	B107A3	B12TK7	B17RL6	
805-RP13	B076V4	B107A4	B12TM6	B17RL7	
805-RP14	B076V5	B107A5	B12TM7	B17RR5	
805-RP15	B076W0	B107A6	B12TN0	B17RR6	
805-RP16	B076W4	B107A7	B12TN1	B19HP8	
805-RP17	B076W7	B107A8	B12TP4	B19JC4	
805-RP18	B0C2R3	B107A9	B12TP8	B19JC5	
805-RP19	B0C2R4	B107B2	B12TR0	B19JC6	
805-RP2	B0C2R5	B107B3	B12TR1	B1B490	
805-RP20	B0C2R6	B107B4	B12TR2	B1B491	
805-RP3	B0C2R7	B107B5	B12TR4	B1B492	
805-RP4	B0C2R8	B107B6	B12TR5	B1B493	
805-RP5	B0C2R9	B107B7	B12TR8	B1B7C3	
805-RP6	B0C2S0	B107B8	B12TR9	B1B7C5	
805-RP7	B0C2S1	B107B9	B12VP6	B1B7C6	
805-RP7	B0C2S2	B107B0	B12VP7	B1B7C7	